

MONTHLY WEATHER REVIEW

SEPTEMBER, 1932

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UNITED STATES DEPARTMENT OF AGRICULTURE

WEATHER BUREAU

WASHINGTON, D. C.

CORRECTIONS

Volume 58, Index:

Page XI, the entry, "Root, Clarence J. The cooperative observer," pages "447-451" should be "451-453."

Volume 60, July, 1932:

Page 161, in "Table of Severe Local Storms," item "Hubbell (near), Nebr., etc., date 4, value of property destroyed," printed as "\$50,000," should be "\$500,000."

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WEST INDIAN HURRICANES OF AUGUST AND SEPTEMBER, 1932

THE TROPICAL STORM OF AUGUST 12-14, 1932, IN THE GULF OF MEXICO

[Weather Bureau, Washington, D. C.]

The active development of this disturbance occurred in the south-central, or middle, Gulf of Mexico, and its increase in intensity was phenomenally rapid. On the morning of the 12th, vessels in the northern Gulf indicated a disturbed condition over the middle Gulf, and coast stations were advised accordingly. On the morning of the 13th the *S. S. J. C. Donnel*, lat. 27°, long. 93° (about 190 miles southeast of Galveston), reported a barometer of 28.88 inches, wind southwest, fresh gales and heavy, confused seas. Advices were immediately issued as follows:

AUGUST 13.—Hoist NE. storm warnings 9:30 a. m. Port O'Connor to Morgan City. Tropical disturbance of increasing intensity attended by gales central about 175 miles southeast of Galveston apparently moving northwestward. Increasing northeast winds to-day, probably reaching gale force late this afternoon or early to-night. More detailed advices this afternoon.

As special reports indicated more clearly the direction of movement of the disturbance, hurricane warnings were ordered at 2:30 p. m. from Freeport to Port Arthur, and at 4:30 p. m. between Freeport and Seadrift.

During the night of the 13th, the center crossed the coast line near and slightly to the east of Freeport, passing almost over East Columbia (Brazoria County) in the interior. Winds of hurricane force were experienced near the center even for some distance inland. Mr. Tracy Clark, at East Columbia, at about 12:40 a. m. of the 14th reported lowest barometer reading as 28.17 inches (corrected 27.83 inches). Mr. Clark estimated the wind velocity at 100 m. p. h., and reported that the so-called eye of the storm was experienced. Capt. E. E. Howell, of the motor vessel *Texas Sport*, at Freeport, reported lowest barometer 28.03 at 9:25 p. m. of the 13th, but no indications of the eye of the storm. By back tracking the center prior to the 13th, taking into consideration its direction and rate of movement during the 13th and 14th, its origin may be tentatively traced to a slightly disturbed condition on the evening of the 10th, between Belize and Tela in Honduras. The complete track is shown on Chart VIII, at the end of this REVIEW.—*R. H. Weightman.*

TROPICAL STORM OF AUGUST 25-31, 1932

A tropical disturbance of very slight intensity appeared southeast of Puerto Rico on the 24th, and advanced on a course about northwest by west with an average speed of about 10 miles per hour, gradually increasing in intensity until it passed across the extreme southern part of Florida. The center passed over the southwestern part of the Island of Puerto Rico without causing damage. It was not attended by strong winds until the 28th, on the evening of which date it was about 100 miles south-

southeast of Nassau, Bahamas, at which time storm warnings were ordered for the Florida coast between Jupiter and Key West. During the next 12 hours its center advanced to the south of Andros Island and storm warnings were ordered between Key West and Fort Myers. On the afternoon of the 29th, hurricane warnings were hoisted between Everglades on the west coast to Fort Lauderdale on the east coast, with the advice that the disturbance was of considerable intensity but small diameter and would pass near and probably south of Miami, attended by dangerous shifting gales and possibly winds of hurricane force near the center. On the evening of the 29th, when the center was about 50 miles south-southeast of Miami, hurricane warnings were extended northward on the east coast to West Palm Beach and northward on the west coast to Boca Grande and storm warnings were extended northward on the west coast to Tarpon Springs and on the east coast to Eau Gallie. The center, which was quite small, passed about 35 miles south of Miami attended near, but only quite near, the center by winds of hurricane force. The disturbance continued its northwestward course, being central on the morning of the 30th, about 30 miles south of Fort Myers. By the following morning it was about 110 miles south by west of Apalachicola. Storm warnings had been previously ordered for the Gulf coast between Carrabelle, Fla., and Morgan City, La. Shortly after noon of the 31st, hurricane warnings were hoisted between Biloxi, Miss., and Panama City, Fla. The center passed inland a short distance west of Mobile about 11 p. m. of the 31st, and recurved to the north and northeastward over western Tennessee and northwestern Ohio, with greatly diminished intensity. The lowest barometer at Fort Morgan was 29.16 inches at 10:30 p. m., of the 31st, and a ship about one mile south of Fort Morgan gave a reading of 28.92 inches at 10:50 p. m. of the 31st. At Bayou Battre at 1:45 a. m., of September 1, a pressure of 29.03 inches was recorded, while the lowest pressure at Mobile was 29.21 inches at 1:45 a. m. of September 1. The disturbance was attended by shifting gales and winds probably reaching hurricane force near the center. The maximum wind at Pensacola was 72 miles per hour from the southeast and at Mobile 52 miles. (See Chart VIII at the end of this REVIEW.)—*R. H. Weightman.*

THE TROPICAL STORM OF AUGUST 30-SEPTEMBER 15, 1932

This disturbance was first noted north of the Virgin Islands the evening of August 30, at which time it was of minor intensity. Its center passed a short distance north of Turks Island, West Indies, and moved west-northwestward during the night of September 2-3, while the storm increased to moderate intensity. During the next three days it increased greatly in intensity, passed east of Nassau, Bahamas, the morning of the 5th, moving

northwestward, then recurved to the north and northeast and passed over Great Abaco Island the afternoon of the 5th, with a reported pressure of below 27.50 inches. Great damage was done by the storm on this island; 16 persons were reported killed and about 300 injured. Capt. H. B. Roberts, master of the Government steamer *Priscilla* and a resident of Green Turtle Cay for 40 years declared, according to the Miami (Fla.) Daily News, that the storm was the worst in his memory. He said that two churches, both built of heavy stone walls almost 3 feet in thickness, were demolished, and the wind, estimated by him at over 200 m. p. h., carried some of the heavy stone blocks nearly half a mile. Photographs published in the News indicate that winds in excess of 150 m. p. h. must have prevailed at Green Turtle Cay.

Several vessels were near the hurricane center during the 6th and 7th; the S. S. *Yankee Arrow* at 3:15 a. m. of the 7th, in lat. 29° 24' N., long. 76° 30' W., reported a lowest pressure of 27.65 inches and the S. S. *Deer Lodge*, near the same position, reported 27.58 inches at 6 a. m. These vessels, as well as several others, reported shifting winds of force 12. As the storm moved northeastward over the ocean during the next few days it was attended by winds of force 11-12 near its center. The highest velocity reported at a land station in the United States was 56 m. p. h. from the northeast and north during the night of the 8th-9th at Nantucket, Mass.

The storm passed over and south of Newfoundland during the 11th, reached Iceland on the 14th, and passed Jan Mayen Island on the 15th, with central pressure still 29 inches, or lower.

Twice-daily advisory warnings were issued in connection with this storm from August 31 to September 9, inclusive. Northeast storm warnings were ordered displayed from Punta Gorda to Daytona, Fla., at 10 a. m. of the 5th, and north of Daytona to Wilmington, N. C., at 9:30 p. m. of the same date. On the morning of the 6th warnings were extended northward to Cape Hatteras and on the following morning to the Virginia Capes. By the morning of the 7th the storm was moving northeastward more rapidly and northeast warnings were ordered north of the Virginia Capes to Eastport, Me. (See Chart VIII at the end of this REVIEW.)—C. L. Mitchell.

THE TROPICAL DISTURBANCE OF SEPTEMBER 9-19

A disturbance of moderate intensity that was first located some distance north of Frontera, Mexico, in the southwestern Gulf of Mexico on September 9, moved very slowly northward for two days, then slowly northeastward for three days, being central about 100 miles south of the mouth of the Mississippi River on the morning of the 14th. This disturbance moved as far during the ensuing 24 hours as it had in the preceding five days, the center passing into the Atlantic Ocean near Jacksonville, Fla., on the morning of the 15th. It continued to move northeastward, passing inland over the coast of Maine on the 17th, then moved northward and later northwestward, reaching western Hudson Strait on the morning of the 19th. The highest wind velocities reported at land stations were 40 m. p. h. at Hatteras and Atlantic City, and 48 m. p. h. at New York City.

Northeast storm warnings were ordered displayed at 4 p. m. of the 12th from Morgan City, La., to Pensacola, Fla., and east of Pensacola to Cedar Keys at 6 p. m. of the 14th; at 10 p. m. of the 14th northeast warnings were displayed from Savannah, Ga., to the Virginia Capes. They were extended northward to Atlantic City at 10 a. m. of the 15th and to Boston at 4 p. m. of the same

date. The next morning they were extended to Eastport, Me. (See Chart VIII at the end of this REVIEW.)—C. L. Mitchell.

THE TROPICAL DISTURBANCE OF SEPTEMBER 17-21

Another disturbance of slight to moderate intensity moved north-northeastward over the western Gulf of Mexico during the 18th and 19th and passed inland over the Louisiana coast a short distance west of Morgan City shortly after noon of the 19th. No winds of gale force were reported. The disturbance moved north-eastward during the next two days and dissipated over southwestern Pennsylvania during the 21st. The lowest pressure reported was 29.66 inches at Morgan City, La., on the 19th.

Northeast storm warnings were displayed from Corpus Christi to Port Arthur, Tex., at 10 p. m. of the 18th, and southeast warnings on the Louisiana coast at 9:30 a. m. of the 19th. (See Chart VIII at the end of this REVIEW.)—C. L. Mitchell.

"SAN CIPRIAN"—HURRICANE OF SEPTEMBER 26-27, 1932

[Weather Bureau Office, San Juan, Puerto Rico]

Trajectory.—With extraordinarily high pressure prevailing over the entire Atlantic and the eastern half of the continent, this storm departed from a normal course and traveled slightly north of west from near St. Barthelémy to Puerto Rico, thence slightly south of west in almost a direct line to the coast of Yucatan south of Belize.

Statistics.—The vortex entered the Island of Puerto Rico near Ceiba at 10 p. m. of September 26, probably directly over the harbor of Ensenada Honda, where the steamers *Jean* and *Acacia* had taken refuge. The former reported 27.70 inches and the latter 28 inches as the low pressure, with a diametric windshift and brief lull. The vortex passed a short distance south of San Juan (28.95 inches at 1 a. m.) and left the island near Aguadilla about 5:30 a. m. of the 27th. The maximum wind velocity at San Juan is estimated at not less than 120 miles per hour. Unfortunately, the wind-instrument tower, an old one already in course of replacement, was blown down at 12:08 a. m., when the record was 66 miles per hour from the northeast. Rainfall was not unusually heavy compared with that during other visitations of this character.

Information.—The first information received at San Juan was from Antigua on the morning of the 26th, indicating that a moderate disturbance had passed there about 3 a. m. The news that St. Barthelémy was near the vortex with a pressure of 29.65 inches and an estimated velocity of 60 to 90 miles per hour was received by mail a week later. Current reports at 8 a. m. of the 26th located the vortex as having passed between St. Kitts and St. Martin. By evening the reports indicated that the vortex was passing between St. Thomas and St. Croix and the following bulletin was issued:

SEPTEMBER 26, 1932.—Advisory 7 p. m. Storm center passing between St. Thomas (29.58 inches) and St. Croix (29.54 inches) apparently moving west-northwest about 10 miles per hour. Will affect east coast before midnight and remainder of island progressively later. Velocities up to 60 miles per hour reported from both St. Croix and St. Thomas.

(Signed) HARTWELL.

All agencies of the insular government, the naval radio, and WKAQ did heroic work in disseminating the information after the first bulletin was issued, and the loss of life and property damage were materially reduced thereby.

Losses.—Many lives were lost from collapse of buildings which were supposed to be safe; some from flying debris,

some from drowning, the loss from the first cause being by far the greatest. As usual, first reports of loss of life were wildly exaggerated, but it would be difficult to exaggerate the effect of the storm on buildings. Only the heaviest construction of masonry and concrete, with cemented tile roofs, came out of the zone of heavy damage unscathed. Concrete walls with "lean" mixtures or too widely spaced reinforcement and with roofs improperly or poorly anchored were wrecked, in many cases with appalling loss of life. The common corrugated iron roofs, put on with smooth or even twisted nails, were carried off like so much cardboard. This material, put on with bolts and nuts over a properly anchored frame, in many cases remained intact. Casualties were 225 dead and 3,000 more or less injured. Property damage, including crops, will total near \$30,000,000. The temporarily homeless were variously estimated from 75,000 up to near a quarter of a million, but these latter figures are somewhat mitigated by the fact that a considerable percentage live in comparatively crude shelters which are quickly replaced. Of crop losses the greatest percentage was citrus, as the citrus belt is almost wholly within the zone of heavy damage. Minor crops were generally a total loss, but they do not represent more than the loss of a single season, whereas citrus and coffee are set back by the loss of much tree growth which will take years to replace. The coffee belt was not all included in the zone of heavy or even moderate damage, but a contributing cause to heavier damage to that industry was the loss of their temporary shade, for which since San Felipe (September 13, 1928) banana plantings had been utilized. Moderate winds will wreck a banana or plantain planting and the heavy stems in falling break the young coffee trees. Sugarcane, in percentage, was probably least injured because, unless actually washed out of the ground by overflow, the canes will continue to grow and will mature. Sugar's greatest damage was to buildings and equipment.

Moderate damage was done on St. Barthelemy, on Tortola, also on St. Thomas and St. John of the United States Virgin Islands. St. Croix reports no damage. Culebra and Vieques, important islands off the east coast of Puerto Rico both suffered heavily; their figures are included in the losses for Puerto Rico.

After passing Puerto Rico, the southern part of Santo Domingo and Haiti felt the storm on the 27th, but no definite reports of losses from these Republics or from Jamaica are available. San Pedro de Macoris (90 miles per hour) and Santo Domingo City (50 miles per hour) give the best idea of intensity in that district.

Shipping.—The Bull Line S. S. *Jean* and the lighthouse tender *Acacia* both dragged their anchors in the harbor of Ensenada Honda near Ceiba and grounded. They were both floated by their own efforts after lightening cargo. One ship in San Juan Harbor had her bridge and boats blown away; the U. S. 3-masted schooner *Gaviota* was wrecked also in San Juan Harbor, and several pier buildings were badly wrecked. Otherwise shipping damage was confined to small craft.

More important storms in Puerto Rican history.—Santa Ana, July 26, 1825; Los Angeles, August 2, 1837; Santa Elena, August 18, 1851; San Narciso, October 29, 1867; San Felipe (1), September 13, 1876; San Ciriaco, August 8, 1899; San Felipe (2), September 13, 1928; San Nicolas, September 10, 1931; San Ciprian, September 26–27, 1932.

Comparative data of damages caused by San Ciriaco, San Felipe, San Nicolas, and San Ciprian storms

	San Ciriaco	San Felipe	San Nicolas	San Ciprian
Loss of life.....	3,000.....	300.....	2.....	225.....
Lowest barometer (San Juan).....	29.23 inches.....	28.81 inches.....	29.17 inches.....	28.95 inches.....
Hurricane winds (San Juan).....	3 hours.....	12 hours.....	2 hours.....	6 hours.....
Maximum wind velocity.....	75 m. p. h.....	150 m. p. h.....	90 m. p. h.....	120 m. p. h.....
Maximum amount of rainfall.....	23.00 inches ¹	29.00 inches ¹	5.00 inches ²	16.70 inches ²
Advance warnings about storm.....	19 hours.....	36 hours.....	40 hours.....	18 hours.....
Damage to property, crops, etc.....	\$20,000,000.....	\$50,000,000.....	\$200,000.....	\$30,000,000.....

¹ In Adjuntas.

² In Maricao.

This storm diminished greatly in intensity after leaving Puerto Rico, and no strong winds were reported west of Haiti. After passing inland near Belize, British Honduras, on October 1, the disturbance moved slightly north of west and dissipated near Vera Cruz, Mexico, on October 3.

Advisory warnings in connection with this disturbance were issued by the Washington office twice daily from September 26 to October 1, inclusive. (See Chart VIII at the end of this REVIEW.)—F. E. Hartwell.

BIBLIOGRAPHY

C. FITZHUGH TALMAN, in Charge of Library

RECENT ADDITIONS

The following have been selected from among the titles of books recently received as representing those most likely to be useful to Weather Bureau officials in their meteorological work and studies:

American national red cross.

Drought of 1931–32 in Montana, North Dakota, South Dakota, Nebraska, and Washington. Washington. 1932. 37 p. illus. 23 cm.

Azzi, Girolamo.

Le climat du blé dans le monde. Les bases écologiques de la culture mondiale du blé. Rome. 1930. xiii, 1165 p. figs. pl. (fold.) 23½ cm.

Barrett, R., & Barrett, K.

Cloudtop mosaics. Cambridge. 1932. ix, 176 p. 18 cm.

Clyde, George D.

Utah snow sampler and scales for measuring water content of snow. Logan. 1932. 8 p. figs. 23 cm. (Utah agric. exp. sta. Circ. 99. June, 1932.)

Convention portant réglementation de la navigation aérienne (Juillet, 1932.) [Paris.] p. 46–97. figs. pl. 31 cm.

Copper and brass research association.

Side-tracking lightning. New York. [1932.] unpag. illus. 23½ cm.

Eredia, Filippo.

Le condizioni anemologiche nella rotta Cagliari-Tunisi. Roma. 1932. 14 p. figs. 24½ cm. (Riv. aeron. Anno 8, N. 8. Agosto 1932–X.)

L'Esplorazione dell'atmosfera a mezzo di palloni piloti a bordo di navi mercantili. Roma. 1932. 26 p. illus. 34 cm. (Annali Uff. pres., v. 4, 1931–X.)

Hann, Julius von.

Handbuch der Klimatologie. Vierte, umgearb. und vermehrt. Aufl. Von Karl Knoch. Band I. Allgemeine Klimalehre. Stuttgart. 1932. xvi, 444 p. figs. 23 cm. (Bibliothek geogr. Handb., herausgeg. von Albrecht Penck.)

Jamaica. [Meteorological service.]

Tables of rainfall records from the year 1870 to year 1929. Kingston. 1932. 7 p. 32 cm.

Manila. Observatory.

Oceanographic papers. Report of the subcommittee on physical and chemical oceanography of the Philippine Islands to the international committee on oceanography of the Pacific science congress. Manila. 1931. 210 p. illus. map (fold.) 29½ cm. (Publications. v. 3, nos. 1-10.)

Martínez, Enrique Alcaraz.

La agricultura y el clima. 1st ed. Barcelona. 1932. 175 p. figs. pl. 21 cm.

Reed, Thomas R.

Forecasting winds the aviator will encounter on his flight. 3 p. 27 cm. (U. S. Dept. agric. Radio serv., off. inform. Western radio unit.) [Manifolded.]

Rose, D. C.

Humidity measurements in the slip stream of flying aircraft. p. 482-489. figs. 25½ cm. (Canadian journ. research. v. 5, Oct., 1931.)

Spencer, H. A.

Lightning, lightning stroke, and its treatment. London. 1932. ix, 91 p. 19 cm. (Minor monograph series.)

Stickel, Paul William.

Measurement and interpretation of forest fire-weather in the western Adirondacks. . . . Syracuse. 1931. 115 p. illus. diagrs. 23 cm. (New York state coll. forestry, Syracuse univ. Tech. pub. no. 34.)

Switzerland. Meteorologische Zentralanstalt.

Versuch einer Vorhersage rascher Pegelstandsänderungen des Rheinstromes bei Basel auf Grund der Niederschlagsbeträge im Einzugsgebiet. 8 p. figs. 31 cm. (Schweizer. Wasser- und Energiewirtsch. No. 7, 1932.)

Talman, Charles Fitzhugh.

Typhoons—good, bad, and indifferent. p. 486-491, 524-525. illus. 31 cm. (Asia. v. 32, Sept.-Oct., 1932.)

White, Walter N.

Method of estimating ground-water supplies based on discharge by plants and evaporation from soil. Results of investigations in Escalante valley, Utah. Washington. 1932. v. 105 p. figs. pl. (in pocket.) 23 cm. (U. S. Geol. survey. Water-supply paper 659-A.)

SOLAR OBSERVATIONS

SOLAR RADIATION MEASUREMENTS DURING SEPTEMBER, 1932

By IRVING F. HAND, Assistant in Solar Radiation Investigations

For a description of instruments employed and their exposures, the reader is referred to the January, 1932, REVIEW, page 26.

Table 1 shows that solar radiation intensities averaged above normal values for September at all three stations at which normal incidence measurements are made.

Table 2 shows an excess in the total solar radiation received on a horizontal surface at all pyrheliometric stations except Twin Falls, La Jolla, and Miami. The excess continues to be well marked in the larger cities.

Table 3 again shows diminished turbidity for the month with the decided increase in radiation receipt at Washington.

Polarization measurements obtained on 9 days at Washington give a mean of 57 per cent with a maximum of 65 per cent on the 28th. At Madison, measurements obtained on 12 days give a mean of 60 per cent with a maximum of 69 per cent on the 28th. These are average September values for Madison, but for Washington the values are somewhat above the September normals.

TABLE 1.—Solar radiation intensities during September, 1932

[Gram-calories per minute per square centimeter of normal surface]

Washington, D. C.												
Date	Sun's zenith distance										Local mean solar time	
	8 a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°		Noon
	75th mer. time	Air mass										
		A. M.					P. M.					
		e.	5.0	4.0	3.0	2.0	*1.0	2.0	3.0	4.0		5.0	e.
	mm.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	mm.	
Sept. 2	17.96			0.49	0.70	1.06					20.57	
Sept. 3	19.89				0.50						19.89	
Sept. 6	16.20		0.76	0.96	1.05						13.13	
Sept. 7	7.57		1.02	1.15	1.26	1.37					7.04	
Sept. 9	10.97				1.27	1.47	1.17				8.48	
Sept. 10	6.27	0.53	0.64	0.76	0.94	1.21					6.76	
Sept. 12	9.47		0.73	0.85	1.16						8.48	

TABLE 1.—Solar radiation intensities during September, 1932—Continued

Washington, D. C.—Continued

Date	Sun's zenith distance										Local mean solar time	
	8 a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°		Noon
	75th mer. time	Air mass										
		A. M.					P. M.					
		e.	5.0	4.0	3.0.	2.0	*1.0	2.0	3.0	4.0		5.0	e.
Sept. 17	mm.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	mm.	
Sept. 28	6.76			0.99	1.14						7.04	
Sept. 28	15.65					1.44	1.22	1.03	0.81	0.73	12.68	
Sept. 29	7.29	0.75	0.83	0.87	1.17						6.76	
Sept. 30	4.75	0.86	0.94	1.12	1.26	1.48	1.22				4.95	
Means		0.71	0.82	0.90	1.04	1.34	1.20	(1.03)	(0.81)	(0.73)		
Departures		+0.02	+0.07	+0.03	±0.00	+0.03	+0.14	+0.18	+0.08	+0.07		

Madison, Wis.

Sept. 6	7.29			1.19	1.27	1.51	1.30				7.57	
Sept. 7	8.81			1.16	1.32	1.52	1.33	1.13			6.27	
Sept. 8	7.04			1.05	1.29	1.41	1.19	0.98			8.48	
Sept. 9	9.14			0.96	1.13	1.36	1.05	0.85			7.29	
Sept. 10	11.81			0.71	0.97	1.38					10.59	
Sept. 21	8.18		0.86	1.02	1.18	1.45					8.18	
Sept. 23	6.27		1.08	1.20	1.37	1.58	1.36	1.16			6.50	
Sept. 24	6.50		0.78	1.16	1.26						5.16	
Sept. 28	4.75		0.90	1.20	1.34	1.50	1.35	1.10			6.27	
Sept. 29	5.36		1.06	1.20	1.34	1.50	1.33	1.17			5.16	
Sept. 30	5.16			1.06	1.24	1.45					6.27	
Means			0.94	1.08	1.24	1.47	1.27	1.06			4.75	
Departures			+0.04	+0.06	+0.08	+0.09	+0.11	+0.04			4.57	

Lincoln, Nebr.

Sept. 1	9.47						1.27	1.04	0.98	0.90	8.18	
Sept. 2	9.83						1.46	1.29	1.15		10.21	
Sept. 3	9.47		0.97	1.00	1.21						10.59	
Sept. 5	9.83		0.79	0.95	1.17	1.39	1.05	0.98	0.90	0.77	9.83	
Sept. 6	8.48		0.87	1.00	1.17	1.39	1.20	1.03	0.91	0.76	12.68	
Sept. 7	9.47	0.77	0.84	0.95	1.13	1.33	1.10	0.87	0.71		11.81	
Sept. 13	10.21					1.37	1.15	0.97	0.83	0.73	9.14	
Sept. 14	10.59					1.34	1.14	0.96	0.80	0.70	7.04	
Sept. 16	6.76			1.02	1.19	1.42					9.47	
Sept. 20	6.27	0.80	0.90	1.03	1.21	1.48	1.16	0.96	0.80	0.69	7.29	
Sept. 27	6.02			1.31			1.21	1.10	1.00	0.90	5.56	
Sept. 28	7.57			1.26	1.35	1.46					7.29	
Sept. 29	7.29			1.02	1.37						4.95	
Means	(0.78)	0.87	1.03	1.23	1.40	1.17	1.01	0.87	0.78			
Departures		+0.02	+0.04	+0.03	+0.05	±0.00	+0.03	+0.04	+0.04	+0.05		

* Extrapolated.

TABLE 2.—Average daily totals of solar radiation (direct + diffuse) received on a horizontal surface

Week beginning—	Gram calories per square centimeter												
	Washington	Madison	Lincoln	Chicago	New York	Fresno	Pittsburgh	Fairbanks	Twin Falls	La Jolla	Gainesville	Miami	New Orleans
1932	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.
Sept. 3.....	474	453	518	432	388	569	396	250	519	260	282	430	424
Sept. 10.....	478	396	405	426	402	489	441	209	502	241	135	303	305
Sept. 17.....	379	389	398	368	380	509	342	153	436	185	222	457	.....
Sept. 24.....	432	349	396	286	348	425	329	114	387	240	247	464	313
Departures from weekly normals													
Sept. 3.....	+90	+77	+90	+110	+64	+39	+33	.....	-9	-65	.....	-26	.....
Sept. 10.....	+98	+48	-1	+123	+88	-24	+70	.....	-3	-56	.....	-65	.....
Sept. 17.....	+26	+47	+14	+78	+82	+27	-3	.....	-34	-111	.....	-11	.....
Sept. 24.....	+82	+55	+42	+26	+72	-19	+25	.....	-47	-79	.....	-2	.....
Accumulated departures on Sept. 30													
	+9,142	+1,990	-1,517	+16,298	+10,798	+8,110	+6,153	.....	-7,457	-474	.....	-3,383	.....

TABLE 3.—Solar radiation measurements and determinations of atmospheric turbidity factor (β), Washington, D. C., September, 1932

Date and solar hour angle	Solar altitude, h .	Air mass, m .	I_m	I_y	I_r	β	Atmospheric dust particles per cubic centimeter	Notes: skylight polarization, P.; clouds, etc.
Sept. 2								
4:58 a.....	16-59	3.39	0.458	0.364	0.273	0.140		Cirrus haze rest of day.
Sept. 6								
4:44 a.....	18-45	3.10	0.878	0.672	0.554	0.090	407	
4:40 a.....	19-31	2.98	0.980	0.677	0.558	0.055		
3:48 a.....	29-22	2.04	1.058	0.789	0.616	0.095		P=56.
3:44 a.....	30-07	1.99	1.054	0.795	0.621	0.100		
Sept. 7								
5:12 a.....	13-04	4.35	0.982	0.768	0.627	0.040	342	
5:08 a.....	13-52	4.12	1.004	0.774	0.616	0.040		
4:48 a.....	17-45	3.26	1.097	0.833	0.665	0.040		
4:51 a.....	18-18	3.17	1.121	0.826	0.669	0.040		
4:34 a.....	20-28	2.84	1.145	0.862	0.677	0.045		
4:30 a.....	21-12	2.75	1.170	0.866	0.683	0.040		
3:08 a.....	36-23	1.69	1.291	0.883	0.738	0.080		P=52. Clouds.
3:04 a.....	37-05	1.65	1.296	0.892	0.742	0.085		
Sept. 9								
4:09 a.....	25-28	2.35	1.186	0.842	0.679	0.050	185	
4:02 a.....	26-04	2.27	1.211	0.851	0.683	0.045		P=63.
2:50 a.....	38-57	1.59	1.354	0.929	0.734	0.055		
2:46 a.....	39-37	1.57	1.365	0.935	0.736	0.055		
0:52 a.....	54-19	1.23	1.394	0.923	0.741	0.070		
0:48 a.....	54-36	1.22	1.416	0.920	0.738	0.065		
1:52 p.....	47-52	1.34	1.315	0.909	0.701	0.080		
1:56 p.....	47-19	1.36	1.307	0.908	0.700	0.085		
2:29 p.....	42-24	1.48	1.280	0.877	0.700	0.085		
2:32 p.....	41-54	1.49	1.270	0.871	0.697	0.090		
3:20 p.....	33-44	1.80	1.225	0.818	0.643	0.050		
4:15 p.....	23-37	2.49	1.069	0.759	0.589	0.055		
Sept. 12								
4:39 a.....	18-16	3.16	0.814	0.656	0.545	0.120	630	
4:36 a.....	18-51	3.08	0.837	0.659	0.546	0.115		
4:23 a.....	21-11	2.75	0.898	0.680	0.562	0.110		
4:20 a.....	21-54	2.67	0.924	0.683	0.565	0.095		
3:02 a.....	36-00	1.70	1.257	0.826	0.645	0.045		
2:58 a.....	36-45	1.67	1.274	0.830	0.648	0.040		P=55.

TABLE 3.—Solar radiation measurements and determinations of atmospheric turbidity factor (β), Washington, D. C., September, 1932—Continued

Date and solar hour angle	Solar altitude, h .	Air mass, m .	I_m	I_y	I_r	β	Atmospheric dust particles per cubic centimeter	Notes: skylight polarization, P.; clouds, etc.
Sept. 17								
4:45 a.....	15-55	3.61	0.872	0.674	0.549	0.070	420	
4:41 a.....	16-41	3.45	0.922	0.677	0.555	0.060		
4:00 a.....	24-22	2.41	1.115	0.789	0.625	0.055		P=52.
3:56 a.....	25-07	2.36	1.115	0.794	0.628	0.060		
2:49 a.....	36-50	1.67	1.150	0.829	0.659	0.100		Clouds.
2:45 a.....	37-28	1.64	1.169	0.832	0.662	0.100		
Sept. 28								
1:52 p.....	41-37	1.51	1.363	0.935	0.741	0.060	554	
1:56 p.....	41-04	1.52	1.330	0.938	0.744	0.080		
2:45 p.....	34-10	1.78	1.268	0.874	0.689	0.060		
2:51 p.....	33-30	1.81	1.257	0.879	0.692	0.060		P=65.
4:04 p.....	20-42	2.81	1.037	0.771	0.622	0.070		
4:08 p.....	19-58	2.92	1.036	0.776	0.625	0.065		
4:28 p.....	16-17	3.54	0.972	0.723	0.584	0.045		
4:32 p.....	15-32	3.70	0.960	0.727	0.586	0.045		
4:42 p.....	13-38	4.19	0.773	0.624	0.528	0.090		
4:44 p.....	13-16	4.30	0.767	0.627	0.533	0.090		
Sept. 29								
4:16 a.....	18-16	3.17	0.965	0.736	0.604	0.070	287	
4:12 a.....	19-00	3.05	0.973	0.741	0.607	0.075		
3:43 a.....	24-15	2.43	1.062	0.789	0.637	0.080		
3:40 a.....	24-46	2.37	1.078	0.794	0.643	0.080		P=58.
3:08 a.....	30-14	1.98	1.144	0.862	0.683	0.110		
3:04 a.....	30-53	1.94	1.158	0.865	0.686	0.100		
Sept. 30								
4:41 a.....	14-06	4.05	0.928	0.789	0.619	0.070	195	
4:22 a.....	16-55	3.41	1.076	0.832	0.656	0.045		
4:00 a.....	20-55	2.78	1.145	0.859	0.684	0.055		
3:57 a.....	21-28	2.71	1.150	0.860	0.687	0.055		
3:26 a.....	26-52	2.20	1.203	0.876	0.721	0.070		
3:22 a.....	27-36	2.15	1.240	0.879	0.725	0.065		
0:03 p.....	48-31	1.33	1.411	0.974	0.739	0.055		
0:06 p.....	48-30	1.33	1.417	0.977	0.739	0.050		
2:28 p.....	36-20	1.69	1.256	0.905	0.707	0.080		
2:32 p.....	35-45	1.71	1.292	0.901	0.706	0.065		P=56.

POSITIONS AND AREAS OF SUN SPOTS

[Communicated by Capt. J. F. Hellweg, Superintendent United States Naval Observatory. Data furnished by Naval Observatory in cooperation with Harvard, Yerkes, Perkins, and Mount Wilson Observatories. The differences of longitude are measured from central meridian, positive west. The north latitudes are plus. Areas are corrected for foreshortening and are expressed in millionths of sun's visible hemisphere. The total area, including spots and groups, is given for each day in the last column]

Date	Eastern standard civil time	Heliographic			Area		Total area for each day	
		Diff. long.	Longi- tude	Lat- tude	Spot	Group		
1932								
Sept. 1 (Mount Wilson)	11 20	h	m	°	'	''		
Sept. 2 (Naval Observatory)	11 30			+42.0	277.5	-9.0	10	10
Sept. 3 (Naval Observatory)	10 21			+54.0	276.2	-9.0	6	6
Sept. 4 (Naval Observatory)	12 35				No spots			
Sept. 5 (Naval Observatory)	13 17				No spots			
Sept. 6 (Naval Observatory)	11 25				No spots			
Sept. 7 (Naval Observatory)	10 19				No spots			
Sept. 8 (Naval Observatory)	14 41				No spots			
Sept. 9 (Naval Observatory)	12 4				No spots			
Sept. 10 (Naval Observatory)	10 42				No spots			
Sept. 11 (Naval Observatory)	11 34				No spots			
Sept. 12 (Naval Observatory)	11 53			-60.0	29.9	+6.0	6	6
Sept. 13 (Naval Observatory)	10 40				No spots			
Sept. 14 (Naval Observatory)	11 59				No spots			
Sept. 15 (Perkins Observatory)					No spots			
Sept. 16 (Naval Observatory)	13 30				No spots			
Sept. 17 (Naval Observatory)	11 12				No spots			
Sept. 18 (Naval Observatory)	13 5				No spots			
Sept. 19 (Naval Observatory)	11 46				No spots			
Sept. 20 (Mount Wilson)	13 0				No spots			
Sept. 21 (Mount Wilson)	12 30			-27.0	303.7	+12.0	12	12
				+70.0	400.7	-3.0	32	44
				-12.0	305.4	+12.0	7	7
Sept. 22 (Mount Wilson)	12 50				No spots			
Sept. 23 (Naval Observatory)	11 2				No spots			
Sept. 24 (Naval Observatory)	10 14				No spots			
Sept. 25 (Naval Observatory)	13 32				No spots			
Sept. 26 (Naval Observatory)	10 57				No spots			
Sept. 27 (Mount Wilson)	12 30			+24.0	275.6	+12.0	12	12
Sept. 28 (Naval Observatory)	11 29			+32.0	270.9	-7.0	9	9
Sept. 29 (Naval Observatory)	10 22			+44.0	270.3	-7.0	12	12
Sept. 30 (Naval Observatory)	10 32			+61.0	274.1	-6.0	6	6
Mean daily area for Sep- tember							4	

PROVISIONAL SUN-SPOT RELATIVE NUMBERS FOR SEPTEMBER, 1932

(Dependent alone on observations at Zurich and its station at Arosa)

[Data furnished through the courtesy of Prof. W. Brunner, University of Zurich, Switzerland]

September, 1932	Relative numbers	September, 1932	Relative numbers	September, 1932	Relative numbers
1	7	11	0	21	19
2	7	12	14	22	8
3	7	13	7	23	0
4	0	14	0	24	8
5	0	15	0	25	8
6	0	16	0	26	0
7	0	17	0	27	
8	0	18	0	28	8
9	0	19	8	29	8
10	0	20	0	30	7

Mean: 29 days=4.0.

a= Passage of an average-sized group through the central meridian.
b= Passage of a large group or spot through the central meridian.
c= New formation of a center of activity: E, on the eastern part of the sun's disk; W, on the western part; M, in the central zone.
d= Entrance of a large or average-sized center of activity on the east limb.

AEROLOGICAL OBSERVATIONS

[The Aerological Division, W. R. Gregg, in charge]

By L. T. SAMUELS

Free-air temperatures for September were close to normal in practically all cases with negative departures predominating. (Table 1.) Relative humidity departures were generally negative except at the southern stations.

Free-air resultant wind velocities for the month were considerably below normal with variable resultant direc-

tions at most stations, the departures from normal being greatest in the southern sections of the country. In these sections a preponderance of northerly components prevailed as compared with the normal resultant directions.

Airplane observations were made on five days during the month at Fairbanks, Alaska, in connection with the International Polar Year program.

TABLE 1.—Free-air temperatures and relative humidities during September, 1932

TEMPERATURE (° C.)

Altitude (meters) m. s. l.	Atlanta, Ga. (303 meters) ¹		Chicago, Ill. (195 meters) ¹		Cleveland, Ohio (246 meters) ¹		Dallas, Tex. (146 meters) ¹		Ellendale, N. Dak. (444 meters)		Norfolk, Va. (3 meters) ⁴		Omaha, Nebr. (300 meters) ¹		Pensacola, Fla. (2 meters) ⁴		San Diego, Calif. (9 meters) ⁴		Washington, D. C. (2 meters) ⁴	
	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal
Surface	19.1	(°)	12.9	(°)	14.4	(°)	21.1	(°)	14.7	+0.3	20.8	-2.4	12.9	(°)	23.0	-1.1	18.7	-1.8	18.2	-2.6
500	19.7	(°)	15.6	(°)	16.6	(°)	22.7	(°)	14.7	+0.3	19.7	-1.8	14.6	(°)	22.6	-0.5	15.6	-1.6	17.9	-1.4
1,000	18.7	+0.4	14.6	-0.4	14.6	-0.4	21.1	+1.4	13.2	+0.3	16.7	-2.3	16.5	+0.2	19.9	-0.7	20.9	+1.7	16.7	-0.9
1,500	15.7	+0.1	11.8	-0.4	11.0	-1.2	17.6	+0.2	10.3	-0.6			14.1	0.0						
2,000	12.5	-0.5	9.3	-0.4	8.6	-1.1	14.8	0.0	7.5	-0.9	11.7	-1.7	11.6	+0.2	14.6	-0.5	19.7	+2.6	12.1	-0.9
2,500	9.7	-0.5	6.8	-0.2	6.3	-0.7	12.3	0.0	4.8	-0.7			8.8	+0.5						
3,000	7.1	-0.4	4.0	-0.6	3.3	-1.3	10.0	+0.3	2.0	-0.5	7.2	-0.7	5.8	+0.6	9.5	-0.1	12.3	+0.9	7.4	-0.8
4,000	1.0	-1.2	-1.9	-1.0	-2.5	-1.6	3.7	-0.4	-0.9	+2.1			-0.5	+0.1	4.0	+0.1			0.6	-1.7
5,000	-5.6	-1.6	-8.1	-0.6	-9.2	-1.7	-1.9	-0.7					-7.4	-1.4	-1.4	+0.3				

RELATIVE HUMIDITY (PER CENT)

	87	(°)	82	(°)	78	(°)	84	(°)	58	-10	78	+4	87	(°)	86	0	79	+7	76	+1
Surface	87	(°)	82	(°)	78	(°)	84	(°)	58	-10	78	+4	87	(°)	86	0	79	+7	76	+1
500	83	(°)	65	(°)	67	(°)	68	(°)	57	-9	68	+1	72	(°)	80	0	89	+9	65	-3
1,000	76	+6	56	-9	66	+1	65	-5	53	-7	66	+2	46	-13	78	+2	58	+2	61	-2
1,500	73	+3	53	-10	69	+6	73	+10	53	-2			44	-12						
2,000	70	+4	49	-10	58	-1	73	+15	52	0	64	+2	44	-10	69	+1	30	-1	57	-3
2,500	63	0	45	-11	53	-3	63	+11	49	-3			44	-11						
3,000	57	-3	43	-9	52	0	54	+6	47	-4	59	+5	45	-9	61	+1	26	+1	47	-6
4,000	56	-2	44	-3	43	-4	59	+19	28	-18			44	-7	57	+2			47	-2
5,000	51	-18	39	-5	41	-3	64	+28					39	-10	64	+7				

¹ Temperature and humidity departures based on normals of Due West, S. C.

² Temperature and humidity departures based on normals of Royal Center, Ind.

³ Temperature departures based on normals determined by interpolating between those of Groesbeck, Tex., and Broken Arrow, Okla. Humidity departures based on normals of Groesbeck, Tex.

⁴ Naval air stations.

⁵ Temperature and humidity departures based on normals of Drexel, Nebr.

⁶ Surface and 500 meter departures omitted because of difference in time between airplane observations and those of kites upon which the normals are based.

Weather Bureau airplane observations made near 5 a. m.; Navy airplane observations near 7 a. m.; Ellendale kite observations near 9 a. m. (Seventy-fifth meridian time).

TABLE 2.—Free-air resultant winds (meters per second) based on pilot-balloon observations made near 7 a. m. (E. S. T.) during September, 1932

[Wind from North=360° East=90° etc.]

Altitude (meters) m. s. l.	Albuquerque, N. Mex. (1,528 meters)		Atlanta, Ga. (309 meters)		Bismarck, N. Dak. (518 meters)		Brownsville, Tex. (12 meters)		Burlington, Vt. (132 meters)		Cheyenne, Wyo. (1,873 meters)		Chicago, Ill. (195 meters)		Cleveland, Ohio (245 meters)		Dallas, Tex. (154 meters)		Havre, Mont. (762 meters)		Jacksonville, Fla. (14 meters)		Key West, Fla. (11 meters)	
	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity
Surface.....	56	1.2	28	1.2	208	0.5	339	0.6	200	1.3	293	2.7	254	0.7	192	0.4	59	1.0	268	1.6	38	0.5	98	1.4
500.....	56	1.2	73	4.0	208	0.5	339	0.6	200	1.3	293	2.7	254	0.7	192	0.4	59	1.0	268	1.6	38	0.5	98	1.4
1,000.....	56	1.2	87	4.1	243	5.2	90	2.3	230	3.3	309	1.2	327	1.4	122	4.3	122	4.3	97	3.8	97	3.8	99	3.8
1,500.....	56	1.2	89	2.7	273	5.3	76	2.2	298	5.5	288	4.1	300	3.9	119	1.9	282	5.6	78	2.6	113	1.3	113	1.3
2,000.....	143	1.7	86	1.8	279	6.8	31	2.1	309	6.7	288	3.6	301	4.4	290	5.0	84	1.1	285	5.9	49	1.4	116	0.7
2,500.....	249	1.1	20	0.5	278	9.1	29	2.7	318	8.2	299	3.9	282	6.9	283	5.3	79	1.3	286	8.0	37	1.5	95	0.4
3,000.....	309	1.9	356	0.7	284	9.9	28	3.3	312	9.2	285	6.2	233	5.7	274	6.0	64	2.0	290	8.9	23	0.8	130	0.4
4,000.....	323	3.0	302	2.9	288	12.3	326	0.8	303	9.9	287	8.7	275	4.9	275	4.9	39	2.3	292	8.6	293	1.8	108	0.3
5,000.....	315	3.6	295	6.5	288	12.3	96	1.7	303	9.9	285	8.7	277	4.9	277	4.9	302	1.8	293	5.4	282	2.2	357	0.6

	Los Angeles, Calif. (217 meters)		Medford, Oreg. (410 meters)		Memphis, Tenn. (85 meters)		New Orleans, La. (25 meters)		Oakland, Calif. (8 meters)		Oklahoma, City, Okla. (402 meters)		Omaha, Nebr. (306 meters)		Phoenix, Ariz. (356 meters)		Sale Lake City, Utah (1,294 meters)		Sault Ste. Marie, Mich. (198 meters)		Seattle, Wash. (14 meters)		Washing- ton, D. C. (10 meters)	
	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity
Surface.....	56	0.3	179	0.4	31	1.0	40	2.0	335	0.7	93	1.3	160	1.4	116	1.8	141	3.1	348	0.2	158	0.2	322	1.1
500.....	95	0.2	284	0.4	77	4.4	69	4.4	313	0.9	150	1.9	177	3.0	114	1.7	273	2.5	7	1.9	312	2.4	312	2.4
1,000.....	21	1.6	304	0.6	58	2.5	74	2.7	343	3.8	202	3.2	218	3.7	219	0.6	292	6.3	10	2.3	334	3.0	334	3.0
1,500.....	281	1.0	81	1.1	30	2.1	50	2.3	352	2.0	201	2.5	260	3.9	263	1.2	148	3.5	300	7.0	327	1.0	330	3.6
2,000.....	220	3.3	82	0.8	6	2.9	8	2.9	306	1.3	182	1.5	270	5.4	279	0.8	180	1.6	285	6.3	308	1.7	312	3.9
2,500.....	166	3.8	245	1.3	356	3.9	360	4.6	277	1.3	187	0.6	273	6.3	300	0.7	230	1.3	282	6.6	293	2.8	302	5.4
3,000.....	146	0.1	262	2.8	346	1.6	338	5.3	285	1.7	53	0.1	300	6.0	57	0.6	275	2.9	277	6.8	293	4.8	295	5.3
4,000.....	146	0.1	284	3.5	21	3.1					2	1.6	286	8.2	121	2.4	285	6.5	266	8.2			270	2.9
5,000.....																	276	7.2	267	8.6				

RIVERS AND FLOODS

By RICHMOND T. ZOCH

[River and Flood Division, Montrose W. Hayes in charge]

Floods occurred in the following rivers during the month of September: The Tombigbee in Alabama, the Solomon and Smoky Hill in Kansas, the West Fork, Trinity, Nueces, and Rio Grande Rivers in Texas, and the Colorado in Arizona. Since some of the rivers in Texas reached flood stage in the latter part of the month and continued into September the floods of Texas will be discussed in a later issue of the REVIEW.

The table herewith gives the usual data for all the overflows, except those in Texas. No damage resulted from any of these floods.

Table of flood stages in September, 1932

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
EAST GULF OF MEXICO DRAINAGE					
Tombigbee: Lock No. 3, Ala.....	<i>Feet</i> 33	7	7	<i>Feet</i> 33.0	7
MISSISSIPPI SYSTEM					
<i>Missouri Basin</i>					
Solomon: Beloit, Kans.....	18	13	13	18.5	13
Smoky Hill: Lindsborg, Kans.....	21	15	16	22.4	15
GULF OF CALIFORNIA DRAINAGE					
Colorado: Parker, Ariz.....	7	1	1	9.0	1

THE WEATHER OF THE ATLANTIC AND PACIFIC OCEANS

(By the Marine Division, W. F. McDonald in charge)

NORTH ATLANTIC OCEAN

By W. F. McDONALD

Atmospheric pressure.—September, 1932, was characterized by atmospheric pressure somewhat below normal over most of the North Atlantic, as shown by Table 1, although it averaged slightly above normal from Newfoundland to the Azores. During a few days only, near the middle of the month, were high-pressure conditions dominant over middle latitudes from the American coast to Europe. The usual Atlantic HIGH was for the most part absent, or broken into two or more shifting areas, one of which showed considerable persistence near the Azores.

TABLE 1.—Averages, departures, and extremes of atmospheric pressure (sea level) at selected stations for the North Atlantic and its shores, September, 1932

Stations	Average	Departure	Highest		Lowest	
			Inches	Date	Inches	Date
Julianehaab, Greenland	29.96	—	30.50	19,20,21	29.37	8
Reykjavik, Iceland	29.67	—0.05	30.24	26	28.77	1
Lerwick, Shetland Islands	29.66	—0.18	30.26	16	28.98	11
Valencia, Ireland	29.92	—0.07	30.50	28	29.31	8
Lisbon, Portugal	29.99	—0.03	30.21	17	29.67	20
Madeira	30.00	—0.02	30.16	27	29.58	17
Horta, Azores	30.19	+0.02	30.38	27	29.84	20
Belle Isle, Newfoundland	30.02	+0.12	30.40	17	29.54	8
Halifax, Nova Scotia	30.02	—0.03	30.42	14	29.72	24
Nantucket	30.03	—0.05	30.44	26	29.26	17
Hatteras	30.05	—0.01	30.38	26	29.37	16
Bermuda	30.01	—0.07	30.22	13, 27	29.66	8
Turks Island	29.92	—0.06	30.04	12	29.68	3
Key West	29.91	—0.03	30.05	18	29.74	6
New Orleans	29.95	—0.03	30.10	27	29.65	1
Cape Gracias, Nicaragua	29.84	—0.07	29.90	16	29.76	30

NOTE.—All data based on a. m. observations only, with departures compiled from best available normals related to time of observations, except Hatteras, Key West, Nantucket, and New Orleans, which are 24-hour corrected means.

Cyclones and gales.—There was a noteworthy increase in storminess as compared with preceding summer months, especially over the western portion of the Atlantic, where more than the average number of gales were reported in September. Hurricane winds occurred in connection with only two of the storms of tropical origin (discussed on pp. 177–179), but the area from the West Indies northward past Bermuda was repeatedly disturbed by a succession of low-pressure areas some of which were attended by moderate gales.

Several lows originated in mid-Atlantic, between Bermuda and the Azores, one of which lasted more than 10 days, during which time it wandered on an irregular path from its origin, on the 17th, east of Bermuda, northward over the Canadian Maritime Provinces to Greenland. Within the same interval, a vigorous low-pressure area developed between the Azores and the Iberian Peninsula and, as a result, gales were most widespread over the main trans-Atlantic steamer routes on the 19th and 20th.

Tropical disturbances.—Four tropical storms occurred in September, as described in detail on pp. 177–179 in this issue of the REVIEW, and as indicated by the storm tracks shown on Chart VIII.

A disturbance that originated near the Virgin Islands at the close of August became the major storm of September. It could be followed for almost three weeks during which the center traveled to the Bahama Islands, recurved and moved thence northeastward to Iceland and on into the Arctic Ocean past North Cape. This storm continued with hurricane intensity until it passed north beyond latitude 40°, and was attended by gales throughout its history.

While this storm threatened the Florida east coast, good seamanship dictated caution in pursuing courses southward through the Straits, and many ships gathered north of the Bahamas, where sea room is ample, to await developments. The sharp recurve of the disturbance, 200 miles east of the Florida coast, took the center northward through the midst of the collected shipping, but, so far as known, no ship or life was lost at sea, and damage to shipping was relatively slight. Good seamanship, aided by the radio weather service, must be largely credited with this favorable outcome.

Charts IX, X, and XI show this storm on September 3 (shortly after its beginning), September 7 (just after recurve), and September 14 (when the center was approaching Iceland).

Chart IX also shows the track and continuing low-pressure area of the hurricane which passed over Pensacola at the end of August, and Chart XI reveals a disturbance, in the northeast Gulf of Mexico, that originated five days earlier near Frontera, Mexico. Two other tropical disturbances occurred in September, one affecting the Gulf of Mexico (September 18–19) and the other in the West Indies and northern Caribbean Sea (September 26–October 1).

Each of the three disturbances last mentioned produced some loss to shipping. The two storms on the Gulf of Mexico, though neither attained hurricane intensity, caused heavy weather that resulted in the loss of an oil barge in tow in the northwest Gulf on September 11, and of a dredge in tow in the northeast Gulf on September 18. The intense but relatively small hurricane that passed over Puerto Rico on the night of September 26–27, caused loss of a large schooner in San Juan harbor and other damage to wharves and shipping in Puerto Rican ports.

Fog.—The number of days with fog was somewhat less than usual over the ocean as a whole, and the number of days on which it was reported from different sections is as follows: Over the Grand Banks, 6 to 8 days; along the American coast, between the fortieth and fiftieth parallels, 2 to 9 days; over the steamer lanes between the tenth and forty-fifth meridians, 1 to 5 days; and along the coast of Europe, 2 to 3 days.

OCEAN GALES AND STORMS, SEPTEMBER, 1932

Vessel	Voyage		Position at time of lowest barometer		Gale began	Time of lowest barometer	Gale ended	Lowest barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Direction and highest force of wind	Shifts of wind near time of lowest barometer
	From—	To—	Latitude	Longitude									
NORTH ATLANTIC OCEAN													
Virginia, Hond. S. S.	Boston	Jamaica	22 30 N	73 15 W	Sept. 3	6 p., 3	Sept. 4	29.08	W	Var., 9-12	NE	—, 12	SSW-SE.
Daylight, Am. S. S.	do	Canal Zone	24 40 N	73 00 W	do	8 0, 4	do	28.97	E	ESE, 12	S	—, 12	ESE-SE.
Jamaica Pioneer, Br. S. S.	Kingston	Rotterdam	37 45 N	51 40 W	Sept. 4	11 p., 4	Sept. 5	29.30	N	N, 10	SSE	N, 10	N-NE.
Momus, Am. S. S.	New York	New Orleans	28 34 N	77 28 W	Sept. 6	4 p., 6	Sept. 7	28.38	E	E, 12	NNW	—, 12	E-NE-N.
W. S. Farish, Am. S. S.	do	Corpus Christi.	29 18 N	78 12 W	Sept. 5	7 p., 6	do	29.22	NE	NE, 12	NW	NE, 12	
Del Valle, Am. S. S.	Newport	Pensacola	30 20 N	77 15 W	Sept. 6	1 a., 7	do	29.18	S	E, 12	N	E, 12	
Musa, Pan. S. S.	New York	Honduras	29 26 N	73 13 W	do	—, 7	do	28.39	E	WSW, —	WNW	SW, 12	
Monarch of Bermuda, Br. S. S.	do	Bermuda	37 00 N	70 00 W	Sept. 7	—, 8	Sept. 9	28.37	SE	E, 10	N	N, 12	
Deer Lodge, Am. S. S.	Avonmouth	Pensacola	29 00 N	75 00 W	Sept. 4	6 a., 7	Sept. 7	27.58	ENE	W, 12	NW	—, 12	W-WNW.
Olna, Br. S. S.	Montreal	Port Arthur	38 50 N	70 00 W	Sept. 8	10 p., 8	Sept. 9	28.68	E	ENE, 11	NW	N, 12	
Europa, Ger. S. S.	New York	English Channel.	39 47 N	62 44 W	Sept. 9	—, 9	Sept. 10	29.38	N	WNW, 9	SW	W, 10	WNW-W.
Dresden, Ger. S. S.	do	Galway	40 15 N	70 15 W	Sept. 8	4 a., 9	Sept. 12	29.35	N	NNW, 11	W	NNW, 12	Steady.
Beemsterdijk, Du. S. S.	Rotterdam	Boston	42 49 N	61 20 W	Sept. 10	5 a., 10	Sept. 10	28.90	SE	N, 11	SW	N, 11	NE-N.
Frederik VIII, Dan. S. S.	Oslo	Halifax	45 50 N	58 30 W	do	7 p., 10	Sept. 11	28.94	SE	NNE, 11	NNE	NNE, 11	Steady.
France, Fr. S. S.	New York	Havre	41 37 N	54 25 W	do	2 p., 11	Sept. 13	29.50	N	WSW, 10	W	WSW, 10	W-SW.
Bremen, Ger. S. S.	Bremerhaven	New York	41 50 N	49 50 W	Sept. 11	11 p., 11	Sept. 12	29.53	SSW	WSW, 10	WNW	WSW, 10	Steady.
Virginia, Am. S. S.	New York	Port Arthur	27 10 N	88 18 W	Sept. 13	Mdt., 13	Sept. 14	29.72	NE	E, —	S	S, 10	
Knoxville City, Am. S. S.	Canal Zone	London	34 00 N	43 45 W	Sept. 15	2 p., 15	Sept. 17	—	NE	NE, —	E	ENE, 10	NE-E.
Alegria, Hond. S. S.	Boston	Port Antonio.	38 30 N	71 10 W	Sept. 16	8 p., 16	—	28.64	SW	SW, 12	SW	SW, 12	SSW-W.
Tuscarora, Br. S. S.	Plymouth	Baton Rouge.	35 41 N	39 48 W	Sept. 15	4 p., 16	Sept. 16	30.02	NNE	NNE, 7	NE	—, 8	NNE-N.
Stuttgart, Ger. S. S.	Cobb	New York	41 08 N	64 02 W	Sept. 17	—, 17	Sept. 17	29.56	ESE	S, 11	W	S, 11	
Mongolia, Ital. S. S.	Collo, Algeria.	Gloucester City, N. J.	32 57 N	52 50 W	Sept. 15	Noon, 17	Sept. 19	29.75	N	NW, 7	NNW	WNW, 8	NW-WNW
Warlab, Br. S. S.	Hartlepool	Montreal	58 32 N	5 30 W	Sept. 18	2 p., 18	Sept. 18	29.41	WNW	NW, 10	N	NNW, 10	
Gulfring, Am. S. S.	Port Arthur	Philadelphia.	28 39 N	91 52 W	Sept. 19	9 a., 19	Sept. 19	29.47	E	ENE, 10	SW	ENE, 10	
Knoxville City, Am. S. S.	Canal Zone	London	41 30 N	26 28 W	do	6 p., 20	Sept. 21	29.29	NNE	NNE	NNE	—, 10	Steady.
Ala, Am. S. S.	Rotterdam	New York	42 25 N	63 10 W	Sept. 20	2 p., 20	do	29.50	NW	NNW	NNE	N, 9	Do.
Glasgow Maru, Jap. S. S.	Bremen	do	49 54 N	14 58 W	do	9 a., 20	Sept. 20	—	ENE	ENE, 8	ENE	—, 8	Do.
West Camak, Am. S. S.	Antwerp	Houston	44 45 N	19 23 W	Sept. 21	4 a., 22	Sept. 23	29.65	NE	NW, 6	N	N, 8	NE-N.
do	do	do	34 41 N	51 14 W	Sept. 27	4 p., 28	Sept. 29	29.60	S	NNW, 9	NW	NNW, 9	S-N-NW.
Wytheville, Am. S. S.	do	Baltimore	50 29 N	26 44 W	Sept. 29	Noon, 29	Sept. 30	29.71	N	N, 7	N	—, 9	
Exeter, Am. S. S.	Gibraltar	Boston	43 10 N	45 30 W	Sept. 30	11 p., 30	Oct. 1	29.54	ESE	SE, 10	W	SE, 10	ESE-SW-W.
Norwegian, Br. S. S.	Montreal	Cardiff	51 39 N	17 26 W	do	—, 30	do	29.94	NNE	NNE, 7	N	NNE, 8	
NORTH PACIFIC OCEAN													
Grays Harbor, Am. S. S.	Puget Sound.	Yokohama	51 16 N	140 10 W	Sept. 2	3 a., 2	Sept. 3	29.40	S	SW, 8	SW	W, 8	SW-SSW.
do	do	do	51 05 N	179 05 W	Sept. 10	8 p., 10	Sept. 11	29.45	W	W, 7	WNW	WNW, 8	Steady.
Golden Dragon, Am. S. S.	Astoria	do	51 34 N	170 43 E	do	6 a., 12	Sept. 12	29.56	SE	SE, 8	W	SE, 8	Do.
Kota Inten, Du. M. S.	Ternate	Portland	41 19 N	178 46 E	Sept. 12	—, 12	do	—	NW	WNW, 7	W	W, 8	WNW-W.
Empress of Russia, Br. S. S.	Vancouver	Yokohama	51 55 N	141 41 W	Sept. 11	3 p., 12	Sept. 13	29.46	SW	SSW, 7	W	S, 10	Steady.
Golden Dragon, Am. S. S.	Astoria	do	47 50 N	163 06 E	Sept. 14	Noon, 15	Sept. 15	29.92	S	S, 8	W	S, 8	8 points.
Empress of Russia, Br. S. S.	Vancouver	do	51 12 N	177 50 W	Sept. 15	7 p., 15	Sept. 17	29.67	SW	SSW, 8	W	SSW, 8	Steady.
Empress of Asia, Br. S. S.	Yokohama	Vancouver	36 00 N	148 00 E	Sept. 18	3 p., 19	Sept. 19	29.41	N	N, 9	SSW	NNE, 10	N-NNW.
Grays Harbor, Am. S. S.	Puget Sound.	Yokohama	41 01 N	145 34 E	do	Noon, 19	Sept. 20	29.62	ENE	NNE, 10	N	NNE, 10	NNE-N.
Asuka Maru, Jap. M. S.	Yokohama	San Francisco	41 00 N	139 10 W	Sept. 21	4 p., 22	Sept. 23	29.57	NE	SE, 8	N	SE, 8	NE-SE.
Texas, Am. S. S.	Hong Kong	Los Angeles	40 30 N	144 40 W	Sept. 22	—, 23	do	29.58	NNE	N, 10	SE	N, 10	N-NE.
Heian Maru, Jap. M. S.	Yokohama	Vancouver	39 50 N	145 03 E	do	2 p., 22	do	29.67	N	NE, 8	NE	NE, 8	N-NE-ENE.
Shoyo Maru, Jap. S. S.	do	Los Angeles	42 40 N	167 42 W	Sept. 25	Mdt., 25	Sept. 26	29.28	NNW	N, 7	NNE	N, 8	Steady.
Mobile City, Am. S. S.	San Francisco	Balboa	17 06 N	101 54 W	Sept. 26	7 p., 26	do	29.22	N	NE, 10	S	SSW, 12	NE-SSW-S.

1 Position approximate.

NORTH PACIFIC OCEAN, SEPTEMBER, 1932

By WILLIS E. HURD

Atmospheric pressure.—The Aleutian LOW was well established with average intensity over extreme northern Pacific waters and adjacent portion of the Bering Sea. In southwestern waters an area of low pressure lay over the Philippine Islands.

Anticyclonic conditions dominated most of the ocean in middle latitudes, but gave place to low pressure in east longitudes at the end of the month.

TABLE 1.—Averages, departures, and extremes of atmospheric pressure at sea level, North Pacific Ocean, September, 1932, at selected stations

Stations	Average pressure	Departure from normal	Highest		Lowest	
			Inches	Date	Inches	Date
	<i>Inches</i>	<i>Inch</i>				
Point Barrow.....	29.75	-0.15	30.30	8	29.16	25
Dutch Harbor.....	29.78	+0.02	30.26	18, 19	29.06	30
St. Paul.....	29.72	+0.01	30.10	18	29.34	11
Kodiak.....	29.72	+0.01	30.22	16	29.16	12
Juneau.....	29.93	+0.01	30.32	15	29.29	13
Tatoosh Island.....	30.13	+0.12	30.47	8	29.90	19
San Francisco.....	29.92	-0.02	30.12	17	29.68	25
Mazatlan.....	29.83	-0.06	29.90	6, 7	29.68	28
Honolulu.....	29.99	-0.01	30.09	3	29.82	25
Midway Island.....	30.02	+0.01	30.18	5, 6	29.78	15
Guam.....	29.81	-0.02	29.90	23	29.74	26
Manila.....	29.75	-0.07	29.88	24	29.56	14
Naha.....	29.82	+0.06	29.92	2, 3	29.74	6, 15, 22
Chichishima.....	29.88	+0.02	30.00	1, 2	29.72	17
Nemuro.....	30.02	-----	30.20	2, 11	29.68	20

NOTE.—Data based on 1 daily observation only, except those for Juneau, Tatoosh Island, San Francisco, and Honolulu, which are based on 2 observations. Departures are computed from best available normals related to time of observation.

Cyclones and gales.—While there was a succession of depressions in Asiatic and Aleutian waters, and an increase in rough weather with the beginning of autumn, the month as a whole can not be characterized as stormy. Of the extratropical gales, a few were reported of force 10, but the major number did not exceed force 8.

The three most important extratropical storms of September occurred during the last 12 days. Of these, one that developed south of Japan acquired considerable intensity on the 19th east of Honshu, where it caused whole gales, then passed northeastward with lessening force.

On the 19th a trough of diminished pressure extended southward from a cyclone central over the Gulf of Alaska. Development between 40°-45° N., 140°-150° W., produced northerly gales of force 10 on the 23d, and lesser gales on earlier dates.

The third storm of note moved eastward from the lower Kuril Islands on the 26th and caused fresh to strong gales on the 27th, when approaching and over the western Aleutians. By the 28th, with central pressure below 29 inches, it had become the deepest storm of the month. During the 27th the American freight steamer *Nevada*, which left Portland for Japan on the 16th, was grounded on the rocky island of Amtignak, in the Aleutians. Only 3 of about 40 persons she carried were saved, their rescue being accomplished by the American steamship *President Madison*, which was led to the spot by the Japanese steamer *Oregon Maru*.

Tropical cyclones.—Several depressions that threatened to become typhoons originated in low latitudes of the Far East. One crossed Luzon on the 15th and caused gales in the South China Sea on the 16th and 17th, along its course toward Anam. On the 17th a fresh east gale (pressure 29.46 inches) was reported from Hong Kong.

In the American tropics one cyclone occurred. It was first noted south of Acapulco on the morning of the 26th, and that evening the American steamer *Mobile City* encountered hurricane winds for a short time, near latitude 17° N., longitude 102° W., with lesser gale forces lasting about three hours. Little is known of the later intensity of the disturbance, except that on the 28th it caused violent southeast winds at Mazatlan during its northward passage into the Gulf of California.

Fog.—Except along the west coast of the United States, fog lessened considerably. There were 13 days with fog reported off the middle California coast, and 8 to 10 days elsewhere between Point Arguello and Vancouver Island. Along the northern steamship routes fog occurred on 1 to 6 days, with fog reports most frequent between the western Aleutians and northern Japan.

Aviation.—At 5:35 a. m. of September 24 the Japanese monoplane *Hochi Nichibei* left Samushiro Beach, Japan, in favorable weather, bound on a non-stop flight for Nome, 2,670 miles distant. The plane was last heard from on the evening of the same day over Kamchatka. Unsettled and stormy conditions occurred over the Bering Sea on the 25th and 26th.

CLIMATOLOGICAL TABLES

CONDENSED CLIMATOLOGICAL SUMMARY

In the following table are given for the various sections of the climatological service of the Weather Bureau the monthly average temperature and total rainfall; the stations reporting the highest and lowest temperatures, with dates of occurrence; the stations reporting the greatest and least total precipitation; and other data as indicated by the several headings.

The mean temperature for each section, the highest and lowest temperatures, the average precipitation, and the greatest and least monthly amounts are found by using all trustworthy records available.

The mean departures from normal temperatures and precipitation are based only on records from stations that have 10 or more years of observations. Of course, the number of such records is smaller than the total number of stations.

Condensed climatological summary of temperature and precipitation by sections, September, 1932

[For description of tables and charts, see REVIEW, January, p. 37]

Section	Temperature								Precipitation							
	Section average	Departure from the normal	Monthly extremes						Section average	Departure from the normal	Greatest monthly		Least monthly		Amount	Amount
			Station	Highest	Date	Station	Lowest	Date			Station	Amount	Station	Amount		
Alabama.....	75.0	-0.5	Wetumpka.....	100	5	2 stations.....	45	129	4.78	+1.40	Bay Minette.....	12.62	Union Springs.....	0.18		
Arizona.....	75.3	+1.6	Fort Mojave.....	120	9	Alpine.....	25	125	0.59	-0.65	2 stations.....	2.35	2 stations.....	0.00		
Arkansas.....	73.8	-0.4	Conway.....	103	3	Dutton.....	35	27	2.54	-0.28	Blytheville.....	7.99	Hope.....	0.30		
California.....	69.9	+2.6	Greenland Ranch.....	121	7	Portola.....	23	26	0.11	-0.34	Tehachapi.....	4.51	149 stations.....	0.00		
Colorado.....	58.2	+0.4	3 stations.....	98	19	2 stations.....	15	110	0.56	-0.84	Calhan.....	2.26	4 stations.....	T.		
Florida.....	79.3	-0.1	2 stations.....	99	16	Cottage Hill.....	55	30	6.22	-0.55	Carrabelle.....	24.99	Zellwood.....	1.30		
Georgia.....	74.9	-0.5	Millen.....	103	2	2 stations.....	44	116	3.94	+0.20	Brunswick.....	13.02	Woodbury.....	0.71		
Idaho.....	58.1	+1.1	Orofino.....	103	5	Obsidian.....	16	9	0.15	-0.82	Pete King Ranger Station.....	1.59	10 stations.....	0.00		
Illinois.....	65.8	-1.6	Mount Carmel.....	97	1	Mount Carroll.....	28	30	3.05	-0.65	Shawneetown.....	11.37	Freeport.....	0.41		
Indiana.....	66.1	-0.9	Madison.....	103	1	4 stations.....	34	124	5.83	+2.59	Bedford.....	10.16	Whiting.....	0.98		
Iowa.....	62.2	-1.7	2 stations.....	94	18	2 stations.....	27	29	2.05	-1.82	Lake Park (near).....	5.34	LeClaire.....	0.62		
Kansas.....	68.5	-0.8	5 stations.....	101	17	Oberlin.....	35	120	2.15	-0.72	Holton.....	6.53	Leoti.....	0.10		
Kentucky.....	69.5	-0.9	2 stations.....	103	1	Farmers.....	34	30	3.66	+0.83	Uniontown.....	10.16	Willow.....	0.70		
Louisiana.....	77.7	-0.2	Dodson.....	103	11	Robeline.....	48	18	4.38	+0.37	Delta Farms.....	13.22	Ruston.....	0.12		
Maryland-Delaware.....	68.0	+0.2	College Park, Md.....	106	1	Oakland, Md.....	25	30	2.20	-1.03	Pocomoke City, Md.....	4.98	Picardy, Md.....	0.20		
Michigan.....	58.8	-1.3	Morenci.....	97	1	2 stations.....	20	120	2.32	-0.91	Chatham.....	7.27	Lake City.....	0.49		
Minnesota.....	57.7	-0.3	Beardsley.....	93	9	do.....	25	123	1.05	-1.89	Grand Meadow.....	2.44	Virginia.....	0.35		
Mississippi.....	75.0	-0.8	2 stations.....	100	15	3 stations.....	48	129	6.65	+3.54	Booneville.....	13.31	Natchez.....	2.25		
Missouri.....	67.8	-1.2	do.....	99	115	Elsberry.....	33	30	2.36	-1.48	Sikeston.....	11.06	Seymour.....	0.24		
Montana.....	55.7	+0.7	Columbus.....	100	7	Wisdom.....	13	21	0.32	-1.05	Wyola.....	1.50	12 stations.....	0.00		
Nebraska.....	63.3	-0.5	Beaver City.....	103	7	2 stations.....	25	122	1.40	-0.74	Central City.....	4.48	Benkelman.....	0.00		
Nevada.....	65.8	+3.3	Logandale.....	111	14	Zorra Vista Ranch.....	25	14	0.25	-0.22	Las Vegas.....	1.70	6 stations.....	0.00		
New England.....	61.0	+0.7	Waterbury, Conn.....	96	2	Somerset, Vt.....	23	30	5.42	+1.81	Kingston, R. I.....	12.36	St. Albans, Vt.....	1.25		
New Jersey.....	66.4	+1.0	Sussex.....	100	1	Charlottesville.....	27	26	2.29	-1.32	Trenton (No. 2).....	4.60	Belvidere.....	0.94		
New Mexico.....	62.9	-1.6	Deming.....	100	16	Gavilan (near).....	21	12	2.57	+0.96	Hope.....	10.47	Ramah.....	T.		
New York.....	61.8	+0.7	Addison.....	103	1	Franklinville.....	22	25	1.79	-1.62	Bridgehampton.....	10.09	Ogdensburg.....	0.37		
North Carolina.....	70.1	-0.8	Nashville.....	107	1	Banners Elk.....	31	30	3.37	-0.59	Mount Mitchell.....	10.07	Durham.....	0.69		
North Dakota.....	56.8	+0.4	Max.....	102	8	2 stations.....	22	122	0.64	-1.01	Amenia.....	2.26	2 stations.....	T.		
Ohio.....	66.0	+0.4	Delaware.....	104	1	Waverly.....	27	30	2.80	-0.19	Greenville.....	6.38	Lock No. 23.....	0.21		
Oklahoma.....	73.4	-0.7	Smithville.....	103	3	2 stations.....	39	2	1.51	-1.77	Chattanooga.....	5.24	Tishomingo.....	0.08		
Oregon.....	59.7	+2.1	3 stations.....	100	17	Ukiah.....	12	21	0.09	-1.14	Astoria.....	1.17	44 stations.....	0.00		
Pennsylvania.....	65.2	+1.1	2 stations.....	105	1	2 stations.....	23	126	1.45	-2.01	Pleasant Mount.....	3.43	Sellingsgrove.....	0.48		
South Carolina.....	73.2	-1.2	Society Hill.....	103	2	Cherokee (near).....	44	30	3.22	-0.88	Caesar's Head.....	8.16	Chappells.....	0.69		
South Dakota.....	61.3	+0.3	2 stations.....	100	8	Castlewood.....	22	29	1.10	-0.68	Castlewood.....	2.68	Ottumwa.....	0.00		
Tennessee.....	70.9	-0.5	Kingsport.....	102	1	Rugby.....	36	29	4.51	+1.48	Selmer.....	10.87	Charleston.....	0.76		
Texas.....	75.1	-2.3	2 stations.....	106	20	Booker.....	42	7	5.19	+2.32	Mexia.....	17.29	Denison (near).....	0.07		
Utah.....	61.7	+1.6	St. George.....	104	6	Woodruff.....	23	14	0.23	-0.90	Blanding.....	1.72	10 stations.....	0.00		
Virginia.....	69.2	+0.7	Lincoln.....	108	1	2 stations.....	33	30	2.01	-1.15	Dante.....	5.64	Dahlgren.....	0.22		
Washington.....	59.2	+1.3	2 stations.....	100	15	Republic.....	18	21	0.62	-1.32	2 stations.....	4.11	13 stations.....	0.00		
West Virginia.....	66.5	+0.4	Moorefield.....	106	1	Bayard.....	25	30	1.58	-1.47	Marlinton.....	4.66	Sharps.....	0.10		
Wisconsin.....	58.5	-1.3	3 stations.....	92	11	Coddington.....	18	29	1.36	-2.34	Lancaster.....	3.64	Stoughton.....	0.04		
Wyoming.....	55.0	+0.9	Basin.....	97	7	2 stations.....	14	22	0.39	-0.90	Dome Lake.....	2.99	8 stations.....	0.00		
Alaska (August).....	51.6	-1.5	View Cove.....	82	116	Barrow.....	22	28	4.45	+1.08	Mill Seven (Cordova).....	28.48	Haines.....	0.84		
Hawaii.....	74.6	-0.1	Mahukona.....	94	119	Kanalohuluhulu.....	44	25	3.75	-2.36	Puu Kukui (upper).....	18.00	Waikapu.....	0.08		
Puerto Rico.....	79.6	+1.1	Mayaguez.....	95	7	Guineo Reservoir.....	51	9	11.57	+3.53	Maricao.....	32.10	Ponce.....	3.65		

¹ Other dates also.

TABLE 1.—Climatological data for Weather Bureau stations, September, 1932

District and station	Elevation of instruments			Pressure		Temperature of the air										Precipitation			Wind					Clear days	Partly cloudy days	Cloudy days	Average cloudiness, tenths	Total snowfall	Snow, sleet, and ice on ground at end of month										
	Barometer above sea level	Thermometer above ground	Anemometer above ground	Station, reduced to mean of 24 hours	Sea level, reduced to mean of 24 hours	Departure from normal	Mean max. + mean min. + 2		Departure from normal	Maximum	Date	Mean minimum	Date	Mean minimum	Greatest daily range	Mean wet thermometer	Mean temperature of the dew point	Mean relative humidity	Total	Departure from normal	Days with 0.01, or more	Total movement	Prevailing direction							Maximum velocity									
							Miles per hour	Direction																						Date									
New England																															4.66		+1.5		Miles				
Eastport	76	67	85	29.95	30.03	0.00	57.5	+1.7	78	3	64	40	30	50	24	53	50	79	2.08	-0.7	9	7,848	s.	33	se.	17	8	7	15	6.6	0.0	0.0							
Greenville, Me.	1,070	16	28	29.90	30.06	0.00	57.1	0.0	80	2	66	34	25	48	31	51	74	9.66	0.0	10	4,236	se.	18	18	9	11	7	12	0.0	0.0	0.0								
Portland, Me.	103	82	117	29.93	30.05	0.00	62.2	+2.6	86	2	70	39	30	54	28	56	51	5.42	+2.3	9	6,648	n.	30	se.	16	17	8	5	3.6	0.0	0.0								
Concord	289	70	79	29.75	30.06	0.00	60.7	+1.4	87	2	72	34	19	49	38	50	51	7.73	+4.3	10	4,111	n.	18	w.	17	17	8	5	4.0	0.0	0.0								
Burlington	403	11	48	29.61	30.05	-0.01	60.2	-0.1	87	1	70	33	30	51	34	50	51	1.87	-1.6	9	6,565	nw.	30	s.	4	10	8	12	5.5	0.0	0.0								
Northfield	876	12	60	29.98	30.08	+0.02	56.7	+0.6	91	1	70	29	19	44	41	50	51	2.79	-0.3	7	4,969	n.	25	s.	4	15	7	8	5.8	0.0	0.0								
Boston	126	106	165	29.92	30.05	-0.02	65.2	+2.0	87	6	73	40	30	57	27	58	53	70	4.50	+1.4	6	6,269	nw.	24	ne.	8	15	8	7	4.3	0.0	0.0							
Nantucket	12	14	90	30.02	30.03	-0.05	64.2	+1.4	80	5	70	47	30	58	19	59	56	81	3.51	+1.1	10	10,782	n.	56	ne.	8	15	4	11	5.1	0.0	0.0							
Block Island	26	11	46	30.02	30.05	-0.03	63.8	+0.4	80	2	69	41	30	59	15	60	57	82	7.34	+4.7	10	10,264	sw.	51	n.	8	14	9	7	4.6	0.0	0.0							
Providence	160	215	251	29.88	30.05	-0.02	64.4	+2.8	90	2	73	38	30	56	27	57	52	69	8.48	+5.3	7	8,162	nw.	32	n.	9	16	6	8	3.9	0.0	0.0							
Hartford	159	122	159	29.90	30.07	0.00	64.4	+2.7	90	2	74	38	30	55	31	58	54	3.96	+0.5	6	6,253	n.	30	ne.	15	8	7	4	4.8	0.0	0.0								
New Haven	106	74	133	29.96	30.07	0.00	65.1	+1.6	92	2	74	39	30	56	32	58	54	72	3.55	0.0	8	6,253	n.	30	ne.	8	13	9	8	4.8	0.0	0.0							
Middle Atlantic States																															70		1.72		-1.5				
Albany	97	107	115	29.96	30.07	0.00	64.0	+0.9	91	1	74	34	30	54	34	7	53	74	1.73	-1.4	7	5,397	s.	24	n.	8	13	14	3	4.0	0.0	0.0							
Binghamton	871	60	68	29.16	30.09	+0.02	61.8	+0.5	97	1	74	29	26	50	43	55	50	1.79	-1.3	7	3,952	ne.	20	sw.	1	9	4	17	6.4	0.0	0.0								
New York	314	414	454	29.73	30.06	-0.02	67.7	+0.9	92	2	76	41	30	60	24	60	56	72	1.56	-1.8	8	9,569	n.	46	nw.	16	11	15	4	4.7	0.0	0.0							
Bellefonte	1,050	5	42	28.98	30.08	0.00	61.6	0.0	96	1	76	30	26	47	43	55	50	0.62	0.0	4	4,977	w.	26	nw.	28	11	13	6	4.3	0.0	0.0								
Harrisburg	374	94	104	29.67	30.07	-0.01	68.3	+2.5	98	1	78	41	30	58	33	58	52	63	1.08	-2.0	4	4,977	n.	26	nw.	28	11	13	6	4.3	0.0	0.0							
Philadelphia	114	123	367	29.96	30.08	0.00	70.8	+2.8	97	1	80	45	30	62	23	60	55	64	1.05	-2.1	6	8,665	n.	40	n.	8	11	11	8	5.0	0.0	0.0							
Reading	325	81	103	29.73	30.07	0.00	68.0	+1.7	96	1	79	41	26	58	35	58	52	0.66	-2.6	3	4,397	sw.	21	nw.	28	11	9	10	4.9	0.0	0.0								
Seranton	805	72	103	29.25	30.10	+0.03	64.0	+1.1	97	1	76	32	30	52	41	55	49	64	1.33	-1.8	6	4,619	n.	22	n.	8	9	18	3	4.7	0.0	0.0							
Atlantic City	52	37	172	30.01	30.07	0.00	68.2	+1.4	87	6	75	46	30	62	22	62	59	76	1.75	-0.9	8	10,218	s.	41	n.	16	11	8	11	5.4	0.0	0.0							
Sandy Hook	22	10	55	30.03	30.05	0.00	68.2	0.0	87	2	74	45	30	62	24	61	57	74	2.28	-1.2	7	10,376	sw.	44	ne.	8	12	9	9	4.9	0.0	0.0							
Trenton	190	159	183	29.87	30.07	0.00	67.6	+0.7	93	1	78	41	30	58	30	59	55	71	2.70	-0.7	7	7,107	n.	34	n.	8	12	11	7	4.6	0.0	0.0							
Baltimore	123	100	215	29.94	30.07	-0.01	71.1	+2.6	96	2	80	47	30	62	24	61	56	63	1.47	-1.9	6	7,102	s.	31	ne.	8	14	9	7	4.3	0.0	0.0							
Washington	112	62	85	29.96	30.08	0.00	70.3	+2.2	98	1	80	46	30	60	28	61	55	67	4.24	+1.0	8	4,618	s.	21	n.	8	13	14	3	4.0	0.0	0.0							
Cape Henry	18	8	54	30.04	30.06	0.00	71.5	-0.3	91	1	78	49	30	65	24	66	62	75	1.66	-1.2	6	8,885	se.	41	n.	16	14	7	9	4.7	0.0	0.0							
Lynchburg	681	153	183	29.35	30.09	+0.01	69.8	+0.8	102	1	80	43	30	59	36	61	56	69	2.22	-1.1	10	4,113	nw.	29	ne.	2	14	10	6	4.2	0.0	0.0							
Norfolk	91	170	205	29.99	30.08	+0.02	72.8	+1.2	96	1	80	55	30	65	23	65	62	75	1.51	-1.7	5	8,124	s.	35	n.	7	11	8	11	5.2	0.0	0.0							
Richmond	144	11	52	29.94	30.09	+0.02	72.2	+1.7	101	2	83	46	30	61	33	62	58	70	0.75	-2.5	9	5,556	ne.	28	ne.	2	10	12	8	4.6	0.0	0.0							
Wytheville	2,304	49	55	27.76	30.09	+0.02	64.3	+0.7	93	1	76	39	30	53	38	57	54	74	1.49	-1.8	11	3,720	nw.	19	n.	7	9	14	7	4.9	0.0	0.0							
South Atlantic States																															76		4.28		+0.1				
Asheville	2,253	89	104	27.78	30.09	+0.02	66.6	+1.6	90	2	77	41	30	56	32	59	55	76	2.21	-0.8	10	5,188	se.	24	se.	20	7	8	15	6.2	0.0	0.0							
Charlotte	779	55	62	29.25	30.08	+0.01	72.0	+0.5	99	2	81	52	30	63	30	64	59	71	1.96	-1.0	8	3,628	ne.	15	ne.	7	8	10	14	6.1	0.0	0.0							
Greensboro	886	6	56	29.15	30.10	0.00	69.4	0.0	99	2	79	46	30	60	35	62	59	78	3.83	0.0	10	5,020	ne.	25	nw.	1	9	10	11	5.4	0.0	0.0							
Hatteras	11	5	50	30.03	30.04	-0.02	74.6	+0.1	92	1	80	60	30	69	15	69	66	76	4.76	+0.2	7	8,799	ne.	47	n.	7	10	13	7	5.1	0.0	0.0							
Raleigh	376	103	146	29.63	30.07	0.00	72.2	+1.1	101	1	81	52	30	63	26	62	57	67	2.27	-1.3	9	5,891	ne.	24	w.	1	9	10	11	5.4	0.0	0.0							
Wilmington	72	73	106	29.98	30.05	0.00	73.9	+0.8	94	1	82	52	30	66	25	68	65	79	5.44	+0.9	11	5,722	ne.	25	n.	7	9	12	9	5.2	0.0	0.0							
Charleston	48	11	92	29.98	30.03	-0.01	76.4	-0.2	91	2	82	61	30	71	23	70	67	79	7.18	+2.6	10	7,612	ne.	36	ne.	15	6	11	13	6.4	0.0	0.0							
Columbia, S. C.	351	41	57	29.68	30.06	+0.01	74.0	-0.5	96	2	83	55	30	66	30	66	62	73	2.46	-1.0	7	4,638	ne.	21	ne.	7	9	10	11	5.4	0.0	0.0							
Greenville, S. C.	1,039	139	146	28.99	30.07	0.00	72.0	+1.4	95	2	80	54	26	64	28	63	68	70	2.79	-0.9	11	5,705	ne.	24	ne.	15	10	9	11	5.4	0.0	0.0							
Augusta	182	62	77	29.84	30.03	-0.02	76.0	-0.7	97	2	85	56	30	67	32	67	64	75	1.31	-2.0	8	3,941	ne.	19	ne.	15	10	9	11	5.7	0.0	0.0							
Savannah	65	150	194	29.97	30.04	+0.01	76.2	+0.0	93	2	83	59	30	70	28	70	69	83	10.09	+4.7	12	7,476	e.	23	w.	15	6	8	16	6.7	0.0	0.0							
Jacksonville	43	209	245	29.94	30.00	+0.06	78.0	-0.3	92	1	84	65	16	72	23	71	69	80	6.61	-0.7	13	7,061	e.	39	sw.	15	4	14	12	6.5	0.0	0.0							
Florida Peninsula																															79		5.98		-1.2				
Key West	22	10	64	29.89	29.91	-0.03	83.6	+1.4	92	8	88	74	28	79	14	77	74	76	3.29	-3.4	12																		

TABLE 1.—Climatological data for Weather Bureau stations, September, 1932—Continued

District and station	Elevation of instruments			Pressure			Temperature of the air										Precipitation			Wind			Average cloudiness, tenths	Total snowfall	Snow, sleet, and ice on ground at end of month							
	Barometer above sea level	Thermometer above ground	Anemometer above ground	Station, reduced to mean of 24 hours	Sea level, reduced to mean of 24 hours	Departure from normal	Mean max. + min.		Departure from normal	Maximum	Date	Minimum	Date	Mean minimum	Greatest daily range	Mean wet thermometer	Mean temperature of the dew-point	Mean relative humidity	Total	Departure from normal	Days with 0.01, or more	Total movement				Prevailing direction	Maximum velocity					
							Miles per hour	Direction																			Date	Clear days	Partly cloudy days	Cloudy days		
Ohio Valley and Tennessee	Ft.	Ft.	Ft.	In.	In.	In.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	%	In.	In.	Miles	Miles	Direction	Date	Clear days	Partly cloudy days	Cloudy days	0-10	In.	In.		
							69.1	+0.4										70	3.71	+0.7								4.9				
Chattanooga	762	190	215	29.26	30.06	0.00	72.7	+0.5	91	18	81	54	30	64	30	63	58	66	1.43	-1.7	9	5,281	ne.	29	se.	20	7	12	11	5.7	0.0	0.0
Knoxville	995	79	97	29.02	30.06	0.00	72.0	+1.4	96	2	82	49	30	62	35	62	58	69	3.67	+1.0	8	4,183	ne.	24	sw.	3	12	9	9	4.9	0.0	0.0
Memphis	399	78	86	29.61	30.03	0.00	73.4	-0.2	91	18	81	55	29	66	25	66	63	76	5.66	+2.9	8	4,628	e.	20	n.	27	9	12	5.6	0.0	0.0	
Nashville	546	168	191	29.50	30.08	+0.02	72.0	+0.2	91	18	81	47	29	63	31	63	58	70	4.32	+0.9	9	4,433	nw.	32	se.	20	11	7	12	5.4	0.0	0.0
Louisville	989	193	230	29.04	30.10	+0.03	69.0	+0.5	99	1	78	46	25	60	32	58	63	2.76	-0.3	7	7,805	se.	35	s.	3	18	5	7	3.9	0.0	0.0	
Evansville	525	188	234	29.51	30.09	+0.03	69.6	-0.9	97	1	78	48	24	61	30	61	57	72	3.01	+0.2	8	6,657	n.	32	s.	2	11	10	9	5.4	0.0	0.0
Indianapolis	431	76	116	29.60	30.07	+0.01	70.1	-0.6	95	1	79	49	30	61	29	62	58	73	7.34	+4.0	8	5,826	n.	25	se.	1	11	11	8	4.8	0.0	0.0
Terre Haute	822	194	230	29.21	30.09	+0.03	66.7	-0.2	91	1	76	46	28	58	24	58	53	68	7.18	+3.8	8	7,269	ne.	37	nw.	18	13	8	9	4.7	0.0	0.0
Cincinnati	575	96	129	29.47	30.08	+0.02	67.2	+0.6	96	1	77	45	25	57	28	59	55	73	6.74	+3.1	7	6,165	n.	27	se.	2	15	6	9	4.2	0.0	0.0
Columbus	822	216	230	29.22	30.09	+0.02	67.7	+1.3	99	1	78	43	30	58	33	58	52	64	4.88	+2.2	7	4,732	ne.	27	s.	2	12	10	8	4.6	0.0	0.0
Dayton	899	137	173	29.14	30.08	+0.02	67.8	+0.8	98	1	77	44	30	58	33	58	53	68	3.78	+0.9	7	5,648	ne.	26	sw.	27	11	12	7	4.9	0.0	0.0
Elkins	1,947	59	67	28.10	30.14	+0.06	62.2	-0.8	94	1	76	33	30	49	30	55	53	83	1.86	-1.3	7	3,037	nw.	18	nw.	17	9	14	7	5.6	0.0	0.0
Parkersburg	637	77	82	29.46	30.11	+0.03	69.1	+1.8	98	1	80	38	30	58	34	58	53	67	0.94	-1.8	5	3,902	se.	24	se.	2	14	10	6	4.8	0.0	0.0
Pittsburgh	842	353	410	29.20	30.09	+0.01	67.8	+1.4	95	1	78	40	30	57	32	57	51	61	0.59	-2.0	8	6,234	nw.	28	sw.	4	10	12	8	4.9	0.0	0.0
Lower Lake Region							63.9	+1.0										69	2.44	-0.5								4.8				
Buffalo	767	243	280	29.24	30.07	+0.01	63.6	+1.2	83	3	72	42	30	56	30	56	52	69	1.67	-1.2	8	9,508	nw.	50	sw.	4	13	11	6	4.6	0.0	0.0
Canton	448	10	61	29.57	30.04	0.00	59.4	+0.1	91	1	71	30	30	48	35	55	50	70	1.03	-2.3	8	5,312	sw.	32	sw.	4	10	13	7	5.0	0.0	0.0
Ithaca	836	74	100	29.18	30.08	0.00	62.6	+1.0	99	1	74	33	30	51	44	55	50	70	1.17	-1.9	11	6,657	nw.	29	s.	4	10	7	13	5.7	0.0	0.0
Oswego	335	71	85	29.69	30.06	0.00	62.8	+1.6	87	1	70	37	30	55	33	56	51	69	2.47	-0.2	10	6,711	s.	27	nw.	29	9	11	10	5.5	0.0	0.0
Rochester	523	86	102	29.51	30.08	+0.02	63.6	+1.2	92	1	73	36	30	54	33	55	49	63	1.47	-1.0	11	5,612	nw.	26	sw.	4	13	10	7	4.5	0.0	0.0
Syracuse	596	65	79	29.44	30.08	+0.01	63.6	+1.9	94	1	73	37	30	54	33	55	49	63	1.12	-1.6	9	5,055	s.	25	nw.	29	9	11	10	5.6	0.0	0.0
Erie	714	130	166	29.31	30.08	+0.02	65.4	+1.8	89	3	73	43	30	58	26	59	56	74	2.29	-1.1	13	8,805	n.	36	sw.	4	12	13	5	4.5	0.0	0.0
Cleveland	762	267	337	29.27	30.09	+0.03	66.2	+2.3	89	19	75	47	30	60	27	57	51	62	1.45	-1.9	8	9,263	n.	33	s.	4	13	10	7	4.5	0.0	0.0
Sandusky	629	5	67	29.42	30.10	+0.04	66.4	+1.1	92	19	75	42	30	57	32	57	51	62	2.18	-0.8	7	5,973	sw.	21	w.	4	14	8	8	4.6	0.0	0.0
Toledo	628	79	87	29.42	30.10	+0.04	64.5	+0.1	88	19	73	43	25	56	26	57	53	72	4.63	+1.8	7	5,975	nw.	22	sw.	13	19	4	7	3.5	0.0	0.0
Fort Wayne	856	100	119	29.18	30.10	+0.04	64.0	-1.5	86	19	74	42	30	54	29	56	52	71	5.70	+2.6	8	5,964	n.	24	w.	4	16	6	8	4.5	0.0	0.0
Detroit	730	218	258	29.32	30.11	+0.05	64.8	+1.3	86	19	73	46	29	57	24	57	53	71	4.05	+1.2	7	6,732	nw.	27	sw.	20	13	10	7	4.5	0.0	0.0
Upper Lake Region							60.2	+0.6										68	1.73	-1.6								4.1				
Alpena	609	13	89	29.42	30.08	+0.05	57.8	+0.2	89	19	69	36	25	47	33	53	49	76	1.94	-1.0	10	7,821	nw.	47	se.	19	13	12	5	4.0	0.0	0.0
Escanaba	612	54	60	29.41	30.08	+0.07	57.7	+0.6	81	8	67	38	29	48	28	52	49	76	1.34	-2.0	8	6,504	nw.	25	s.	18	15	11	4	3.8	0.0	0.0
Grand Haven	632	54	89	29.41	30.08	+0.04	60.5	-0.4	83	12	70	37	25	51	33	55	51	73	0.95	-2.7	7	6,039	nw.	27	nw.	17	13	10	7	4.5	0.0	0.0
Grand Rapids	707	70	244	29.32	30.09	+0.04	62.8	+0.1	89	19	73	39	25	53	30	54	49	68	0.91	-2.6	7	7,316	n.	37	sw.	19	9	13	8	4.9	0.0	0.0
Houghton	668	64	99	29.31	30.04	+0.04	58.9	+2.0	84	2	67	41	24	51	28	58	53	76	2.58	-1.0	15	7,030	w.	34	w.	15	12	11	7	4.4	1.0	0.0
Lansing	878	6	88	29.16	30.10	0.00	60.0	-1.4	85	19	70	35	25	50	30	55	53	83	3.04	+0.1	7	5,644	nw.	22	e.	3	10	12	8	4.8	0.0	0.0
Ludington	637	60	66	29.39	30.08	+0.04	60.4	+1.1	82	12	68	39	25	53	30	55	51	73	0.73	-2.5	10	6,748	n.	26	sw.	20	19	10	1	2.9	0.0	0.0
Marquette	734	77	111	29.24	30.06	+0.05	60.3	+2.8	84	8	69	41	29	52	28	52	48	71	1.86	-1.4	16	7,760	w.	27	sw.	15	11	12	7	4.7	0.0	0.0
Port Huron	638	79	120	29.39	30.08	+0.02	61.6	-0.0	84	19	70	38	29	54	28	56	52	76	4.19	+1.4	10	7,239	nw.	30	nw.	17	12	13	5	4.2	0.0	0.0
Sault Sainte Marie	614	11	52	29.37	30.06	+0.04	57.8	+2.3	89	11	66	38	25	49	29	52	49	78	2.83	-1.4	16	5,887	nw.	32	nw.	28	12	13	5	4.3	0.0	0.0
Chicago	673	7	131	29.38	30.11	+0.07	64.4	-0.8	87	19	72	46	28	57	27	57	53	71	1.12	-2.0	5	7,087	ne.	24	s.	19	15	9	6	3.8	0.0	0.0
Green Bay	617	109	141	29.41	30.07	+0.05	60.6	+0.2	89	19	72	36	29	50	32	52	46	66	1.21	-2.3	7	7,024	nw.	33	sw.	19	17	8	5	3.8	0.0	0.0
Milwaukee	681	97	221	29.36	30.09	+0.06	63.1	+0.6	88	19	70	45	29	56	26	55	49	66	0.90	-2.4	4	8,312	n.	32	s.	18	19	6	5	3.2	0.0	0.0
Duluth	1,133	5	47	28.82	30.04	+0.06	56.7	+1.6	83	2	67	36	17	46	30	49	45	74	0.68	-2.6	5	8,576	w.	32	nw.	14	15	9	6	3.9	0.0	0.0
North Dakota							57.7	+0.5										58	0.79	-0.9								4.0				
Moorhead	940	50	58	29.01																												

TABLE 1.—Climatological data for Weather Bureau stations, September, 1932—Continued

District and station	Elevation of instruments			Pressure			Temperature of the air										Precipitation			Wind					Average cloudiness, tenths		Total snowfall	Snow, sleet, and ice on ground at end of month							
	Barometer above sea level	Thermometer above ground	Anemometer above ground	Station, reduced to mean of 24 hours	Sea level, reduced to mean of 24 hours	Departure from normal	Mean max., + mean min., +2	Departure from normal	Maximum	Date	Mean minimum	Date	Mean	Minimum	Date	Greatest daily range	Mean wet thermometer	Mean temperature of the dew-point	Mean relative humidity	Total	Departure from normal	Days with 0.01, or more	Total movement	Prevailing direction	Maximum velocity			Clear days	Partly cloudy days	Cloudy days	0-10	In.	In.		
																									Miles per hour	Direction	Date								
Northern Slope																																			
Billings	3,140	5					58.3	+1.0	95	8	78	30	21	39	54					1.30				nw.					14	9	7		0.0	0.0	
Havre	2,505	11	67	27.40	30.02	+0.08	57.4	+1.0	92	6	73	28	26	42	47					0.38	-0.9			w.	37	nw.	8	14	11	5	4.0	0.0	0.0		
Helena	4,124	89	113	25.88	30.04	+0.07	58.4	+1.8	87	6	72	31	22	45	37					1.2	-1.2			sw.	32	w.	8	13	14	3	4.0	0.0	0.0		
Kalispell	2,973	48	56	27.02	30.06	+0.10	54.8	+1.3	84	6	70	29	21	40	38					0.15	-1.1			nw.	31	w.	8	18	8	4	3.3	0.0	0.0		
Miles City	2,371	48	55	27.53	30.07	+0.12	60.0	-1.2	97	8	74	34	22	46	45					0.16	-0.9			s.	33	nw.	8	17	9	4	3.5	0.0	0.0		
Rapid City	3,259	50	58	26.68	30.07	+0.11	61.0	+0.6	92	8	75	37	27	47	40					0.25	-1.0			w.	35	nw.	8	19	7	4	3.0	0.0	0.0		
Cheyenne	6,088	84	101	24.13	30.02	-0.06	58.2	+1.2	83	7	72	36	21	45	39					1.13	-0.1			s.	32	w.	18	18	9	3	3.0	0.0	0.0		
Lander	5,372	60	68	24.74	30.03	+0.07	59.1	+3.4	89	6	76	34	25	46	44					1.13	-0.9			sw.	36	nw.	28	20	9	1	2.7	0.0	0.0		
Sheridan	3,790	10	47	26.18	30.07	+0.13	57.1	-1.1	94	8	74	32	22	40	52					1.15	-0.1			sw.	32	nw.	8	19	8	3	3.0	0.0	0.0		
Yellowstone Park	6,241	11	48	24.02	30.10	+0.13	52.3	-1.1	80	6	68	27	21	37	40					0.47	-0.8			sw.	29	sw.	8	13	11	6	4.6	0.0	0.0		
North Platte	2,821	11	51	27.15	30.05	+0.08	63.8	+1.7	95	18	78	35	27	50	42					0.71	-0.6			s.	20	ne.	19	17	8	5	3.6	0.0	0.0		
Middle Slope																																			
Denver	5,292	106	113	24.83	30.02	+0.06	63.6	+0.7	87	4	76	42	27	51	34					0.11	-0.9			s.	21	n.	21	17	10	3	3.0	0.0	0.0		
Pueblo	4,685	80	86	25.38	30.02	+0.06	65.1	+0.5	91	8	79	43	26	51	39					0.23	-0.5			e.	22	nw.	18	19	8	3	3.0	0.0	0.0		
Concordia	1,392	50	58	28.63	30.09	+0.10	66.6	-1.7	93	18	78	44	24	55	37					2.02	-0.6			sw.	32	sw.	18	18	8	4	3.6	0.0	0.0		
Dodge City	2,509	10	86	27.48	30.05	+0.07	68.8	-0.6	95	18	82	45	27	56	37					2.35	+0.4			sw.	32	sw.	18	16	7	7	3.6	0.0	0.0		
Wichita	1,358	85	93	28.63	30.04	+0.04	71.5	+0.9	95	5	83	50	23	60	33					1.26	-1.8			ne.	36	sw.	18	16	6	8	4.5	0.0	0.0		
Oklahoma City	1,214	10	47	28.76	30.02	+0.03	73.4	+0.6	95	21	84	48	28	63	29					1.20	-1.8			s.	24	sw.	21	16	7	7	3.6	0.0	0.0		
Southern Slope																																			
Abilene	1,738	10	52	28.23	30.02	+0.06	71.4	-3.9	95	20	80	58	29	63	28					10.53	+7.8			s.	21	sw.	21	11	2	17	5.9	0.0	0.0		
Amarillo	3,676	10	49	26.35	30.03	+0.07	68.9	-0.4	97	19	80	48	28	58	34					2.79	+0.5			se.	26	se.	21	15	8	7	4.6	0.0	0.0		
Big Spring	2,537	5	62	27.43	30.02	+0.07	69.2	-1.7	94	19	77	55	29	62	30					4.47	-1.3			se.	11	se.	11	11	18	6	0.0	0.0	0.0		
Del Rio	944	64	71	28.96	29.93	-0.01	75.2	-4.0	98	20	82	61	30	68	29					9.95	+7.0			se.	21	n.	1	9	3	18	6.2	0.0	0.0		
Roswell	3,566	75	85	26.43	30.00	+0.08	67.6	-2.7	91	15	79	48	29	56	38					4.98	+2.9			s.	32	n.	14	13	11	6	4.5	0.0	0.0		
Southern Plateau																																			
El Paso	3,778	152	175	26.20	29.91	+0.03	73.9	0.0	98	16	85	49	30	62	33					2.85	+1.6			e.	34	sw.	25	19	6	5	2.9	0.0	0.0		
Albuquerque	4,972	51	66	25.12	29.92	+0.02	66.6	-1.1	91	15	81	45	12	52	44					5.37	-0.8			ne.	20	se.	24	20	4	6	2.9	0.0	0.0		
Santa Fe	7,013	38	53	23.37	29.95	+0.02	60.7	-0.2	82	4	73	42	28	48	37					1.97	+0.5			e.	24	ne.	1	15	8	7	3.9	0.0	0.0		
Flagstaff	6,907	10	59	23.45	29.92	+0.03	57.9	-2.4	85	9	76	34	27	40	47					1.53	-0.5			nw.	24	nw.	21	14	11	5	0.0	0.0	0.0		
Phoenix	1,108	10	107	28.66	29.78	-0.03	87.0	+3.2	110	4	102	65	24	72	40					3.34	-0.4			e.	35	sw.	28	26	3	1	1.2	0.0	0.0		
Yuma	141	9	54	29.62	29.76	-0.02	86.9	+3.2	113	4	103	61	19	71	45					0.03	-0.3			sw.	19	e.	29	29	1	0	0.4	0.0	0.0		
Independence	3,957	6	27	26.00	29.95	+0.09	72.8	+4.8	98	8	90	48	25	56	43					1.17	+1.1			nw.	18	w.	25	21	4	5	0.0	0.0	0.0		
Middle Plateau																																			
Reno	4,532	74	81	25.52	29.94	-0.01	66.5	+6.8	93	7	85	38	26	48	44					0.04	-0.2			sw.	34	nw.	25	26	4	0	1.1	0.0	0.0		
Tonopah	6,090	12	20				68.4	-1.5	89	15	80	43	28	57	48					0.40	-0.4			nw.	19	nw.	18	26	3	1	1.1	0.0	0.0		
Winnemucca	4,344	18	56	25.68	30.02	+0.09	63.8	+4.6	94	5	84	35	20	44	54					0.01	-0.4			ne.	25	nw.	17	20	3	7	2.7	0.0	0.0		
Modena	5,473	10	46	24.68	29.95	+0.03	62.0	+2.0	89	6	80	36	10	44	48					0.76	0.0			w.	25	nw.	17	20	3	7	2.7	0.0	0.0		
Salt Lake City	4,360	163	203	25.69	29.99	+0.04	66.8	+2.4	92	6	79	48	20	54	34					1.0	-1.0			se.	29	sw.	6	24	5	1	1.7	0.0	0.0		
Grand Junction	4,602	60	68	25.44	29.98	+0.03	67.2	+1.0	89	12	82	46	25	52	36					0.11	-0.8			se.	18	w.	19	24	4	2	1.8	0.0	0.0		
Northern Plateau																																			
Baker	3,471	48	53	26.54	30.11	+0.12	57.6	+1.6	90	5	75	25	21	40	47					0.02	-0.7			se.	17	n.	8	19	10	1	2.4	0.0	0.0		
Boise	2,739	79	87	27.22	30.05	+0.08	64.1	+2.2	94	7	80	37	19	48	40					0.02	-0.5			nw.	18	nw.	8	21	6	3	2.5	0.0	0.0		
Lewiston	757	40	48	29.28	30.08	+0.10	64.2	-1.4	97	5	82	36	21	47	48					0.07	-0.9			w.	26	nw.	17	21	6	3	2.4	0.0	0.0		
Pocatello	4,477	60	68	25.56	30.04	+0.08	62.6	+2.4	91	6	78	38	9	47	39					0.08	-0.8			sw.	32	sw.	8	21	5	4	2.8	0.0	0.0		
Spokane	1,929	101	110	28.04	30.07	+0.09	61.2	+2.0	89	5	76	33	21	46	42					0.06	-0.8			e.	25	sw.	17	18	9	3	2.7	0.0	0.0		
Walla Walla	991	57	65	28.99	30.05	+0.05	66.0	+2.2	95	5	79	40	21	53	37					0.05	-0.8			w.	23	w.	17	22	5	3	2.3	0.0	0.0		
Yakima	1,076	58	67	28.93	30.07	+0.07	65.2	+4.1	94	6	80	40	21	50	40					0.05	-1.2			nw.	27	w.	17	23	4	3	2.0	0.0	0.0		
North Pacific Coast Region																																			
North Head	211	11	56	29.91	30.13	+0.10	55.8	-0.7	83	27	61	46	26	51	22					0.99	-2.0			n.			19	12	9	9	4.7	0.0	0.0		
Port Angeles	29	8	53		30.16	+0.08	54.9	-1.5	74	5	64	38	21	46	27					0.46	-1.0			w.	25	w.	17	13	14	3	0.0	0.0	0.0		
Seattle	125	215	250	29.98	30.11	+0.10	60.5	+2.4	81	10	69	44	22	52	28					0.23	-1.5			ne.	34	sw.	7	12	13	5	4.2	0.0	0.0		
Tacoma	194	172	201	29.92	30.12	+0.10	59.0	+1.7	83	10	68	44	21	50	32					0.23	-1.9			n.	28	sw.	7	12	14	4	4.6	0.0	0.0		
Tatoosh Island	86	9	53	30.03	30.13	+0.12	53.9	+0.9	68	28	58	46	26	50	17					3.30	-2.4			s.	34	e.	27	11	6	13	5.8	0.0	0.0		
Medford	1,329	29	58	28.61	30.00	+0.07	67.8	-1.0	100	15	89	40	26	47	53					2.00	-0.5			n.	23	n.	17	27	3	0	0.8	0.0	0.0		
Portland, Oreg.	153	68	106	29.93	30.09	+0.06	65.6	+3.9	91	10	77	46	21	54	33					0.11	-1.9			nw.	21	w.	7	19	7	4	2.8	0.0	0.0		
Roseburg	510	75	99	29.51	30.05	+0.03	64.2	+1.3	91	27	80																								

TABLE 2.—Data furnished by the Canadian Meteorological Service, September, 1932

Stations	Altitude above mean sea level, Jan. 1, 1919	Pressure			Temperature of the air						Precipitation		
		Station reduced to mean of 24 hours	Sea level reduced to mean of 24 hours	Departure from normal	Mean max. + mean min. +2	Departure from normal	Mean maximum	Mean minimum	Highest	Lowest	Total	Departure from normal	Total snowfall
	Feet	In.	In.	In.	° F.	° F.	° F.	° F.	° F.	° F.	In.	In.	In.
Cape Race, N. F.	99				55.9		62.2	49.5	72	33	3.70		0.0
Sydney, C. B. I.	48												
Halifax, N. S.	88												
Yarmouth, N. S.	65												
Charlottetown, P. E. I.	38												
Chatham, N. B.	28												
Father Point, Que.	20	29.95	29.97	-0.01	52.3	+1.9	59.6	44.9	73	32	2.92	-0.21	0.0
Quebec, Que.	206	29.70	30.02	+0.01	57.3	+2.2	64.7	50.0	80	32	5.13	+1.46	0.0
Doucet, Que.	1,236				50.5		62.9	38.1	80	25	5.31		0.2
Montreal, Que.	187	29.81	30.01	-0.03	61.0	+2.6	68.7	53.3	89	37	2.28	-1.02	0.0
Ottawa, Ont.	236	29.78	30.04	.00	61.7	+4.3	73.1	50.3	92	32			
Kingston, Ont.	285	29.75	30.06	+0.02	62.0	+2.0	70.3	53.8	84	34	2.78	-0.02	0.0
Toronto, Ont.	379	29.66	30.06	.00	62.0	+3.0	70.7	53.4	87	38	3.04	-0.21	0.0
Cochrane, Ont.	930				53.6		63.4	43.8	83	32	2.44		0.7
White River, Ont.	1,244	28.68	29.90	+0.01	52.2	+1.9	64.9	39.4	81	23	1.92	-0.85	0.0
London, Ont.	808				59.9		71.2	48.6	81	29	3.24		0.0
Southampton, Ont.	656	29.36	30.07	+0.02	59.3	+1.8	68.8	49.8	80	37	6.48	+3.54	0.0
Perry Sound, Ont.	688	29.36	30.04	+0.01	57.7	+1.7	65.6	49.8	77	36	7.29	+3.62	0.0
Port Arthur, Ont.	644	29.29	30.00	+0.02	55.2	+3.0	66.4	44.1	84	34	1.52	-1.96	0.0
Winnipeg, Man.	760	29.17	30.00	+0.06	56.0	+3.5	68.2	43.9	88	30	1.89	-0.14	0.0
Minnedosa, Man.	1,600	28.16	29.97	+0.03	52.4	+1.9	66.3	38.4	84	26	0.74	-0.62	0.0
Le Pas, Man.	860				52.0		62.7	41.4	78	26	1.21		0.0
Qu'Appelle, Sask.	2,115	27.71	29.94	+0.02	53.8	+2.7	67.9	39.7	87	26	0.26	-1.07	0.0
Moose Jaw, Sask.	1,759				55.9		70.5	41.2	92	26	0.40		0.0
Swift Current, Sask.	2,392	27.42	29.93	+0.01	54.9	+1.8	70.4	39.4	90	28	0.33	-0.89	0.0
Medicine Hat, Alb.	2,365	27.47	29.95	+0.03	55.9	+0.9	68.7	43.2	90	34	2.92	+1.74	0.0
Calgary, Alb.	3,540	26.31	29.97	+0.05	52.1	+2.3	64.7	39.5	83	28	1.21	-0.15	0.0
Banff, Alb.	4,521	25.44	30.00	+0.07	48.7	+2.9	61.1	36.3	78	26	0.87	-0.80	0.0
Prince Albert, Sask.	1,450	28.40	29.97	+0.07	53.0	+4.6	65.4	40.7	84	28	0.83	-0.45	0.0
Battleford, Sask.	1,592	28.21	29.94	+0.04	54.5	+2.7	69.8	39.3	96	27	0.81	-0.44	0.0
Edmonton, Alb.	2,150	27.64	29.90	.00	53.5	+4.2	66.5	40.6	87	34	0.98	-0.35	0.0
Kamloops, B. C.	1,262	28.72	30.00	+0.03	58.1	+0.7	69.5	46.7	86	35	0.57	-0.28	0.0
Victoria, B. C.	230	29.88	30.13	+0.12	57.6	+2.8	65.8	49.4	76	44	0.56	-1.60	0.0
Barkerville, B. C.	4,180												
Estevan Point, B. C.	20				52.1		57.8	46.5	66	40	6.43		0.0
Prince Rupert, B. C.	170				51.6		56.9	46.4	66	39	16.60		0.0
Hamilton, Ber.	151	29.88	30.04	-0.03	77.2	-0.2	82.4	72.0	87	67	2.13	-4.38	0.0

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Cape Race, N. F.	99												
Sydney, C. B. I.	48	29.93	29.98	+0.03	66.2	+2.9	75.6	56.9	82	46	4.42	+0.80	0.0
Halifax, N. S.	88	29.87	29.97	+0.01	65.9	+2.3	74.8	57.1	84	46	3.97	-0.38	0.0
Yarmouth, N. S.	65	29.87	29.94	-0.03	63.1	+2.9	71.5	54.8	80	50	3.00	-0.62	0.0
Charlottetown, P. E. I.	38	29.87	29.91	-0.03	67.3	+3.0	73.8	60.9	83	53	1.28	-2.46	0.0
Chatham, N. B.	28	29.80	29.83	-0.10	65.9	+2.7	75.8	56.0	88	43	4.62	+0.58	0.0

SEVERE LOCAL STORMS, SEPTEMBER, 1932

[The table herewith contains such data as have been received concerning severe local storms that occurred during the month. A revised list of tornadoes will appear in the Annual Report of the Chief of Bureau]

Place	Date	Time	Width of path (yards)	Loss of life	Value of property destroyed	Character of storm	Remarks	Authority
Fort Morgan and Bayou Labatre, Ala.	Aug. 31-Sept. 1	10.50 p. m.-3 a. m.				Wind and rain	No details.	Official, U. S. Weather Bureau.
Pike County, Ala.	1	8 a. m.	30-50		\$2,500	Tornadic winds	Property damage; path 6 miles long.	Do.
Baldwin and Mobile Counties, Ala.	1			2	105,000	Hurricane	Damage to property, fruit, and pecans; 2 persons missing.	Do.
Gretna, Va. (2 miles east)	2	4 p. m.	200		1,500	Wind	Property damaged.	Do.
Greensboro, N. C.	2	P. m.				Electrical	Power lines and telephones disabled; house damaged by lightning.	Do.
Taylor, Tex.	3					Heavy rain	Cotton considerably damaged.	Do.
Buffalo, N. Y.	4					Gale	Power lines torn down; small craft in peril.	Do.
Dawson, N. Mex.	5	2 p. m.	800			Hail	Considerable damage.	Do.
Abilene, Tex., and vicinity.	5-6			4		Heavy rain	Fields washed; lowlands flooded; crops damaged; livestock drowned.	Do.
Burlington, Vt.	6	8 p. m.				do.	Only slight damage reported because of dry condition of soil.	Do.
Caldwell, Iowa.	8					Electrical	Electric service interrupted; barn burned.	Do.
Havre, Mont.	8				1,000	Wind	Crops and fences blown down; considerable soil shifted; aerial pole and trees blown down.	Do.
Nantucket, Mass., and neighboring waters.	8-9						Thirty small boats washed ashore. Tremendous seas at fishing grounds.	Do.
Trego and Ellis Counties, Kans.	10	3:20 p. m.	14-5			Heavy hail and downpour.	Crops damaged; cattle drowned; path 20 miles long.	Do.
Plainsville, Kans. (vicinity).	10	7:30 p. m.	12		10,000	Heavy hail.	Ground covered 1 to 2 inches deep with hailstones; path 17 miles long.	Do.

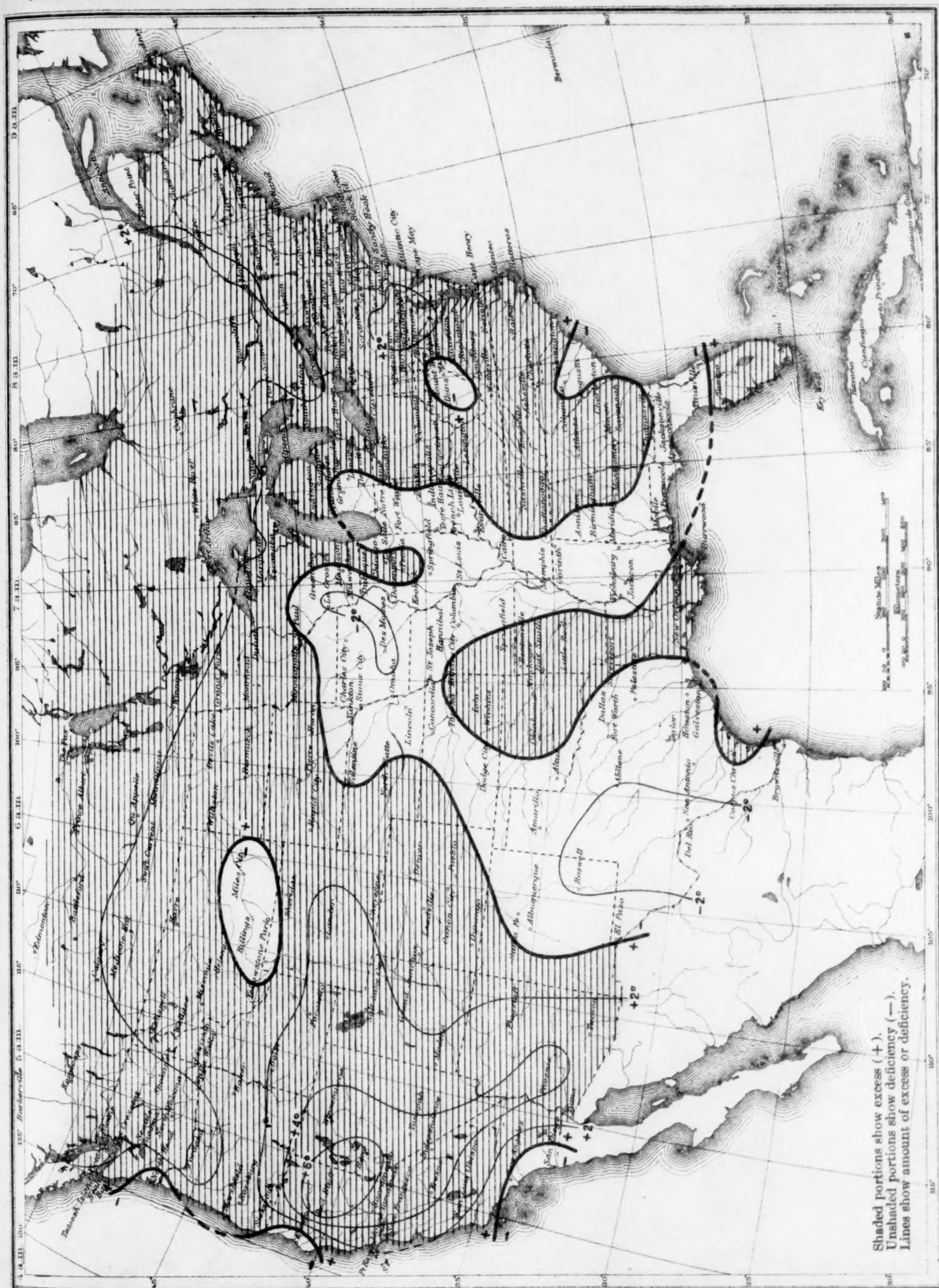
¹ Miles instead of yards.

Severe local storms, September, 1932—Continued

Place	Date	Time	Width of path (yards)	Loss of life	Value of property destroyed	Character of storm	Remarks	Authority
Phillips, Smith, and Jewell Counties, Kans.	Sept. 11	4-5:30 p. m.	13		\$25,000	Heavy hail.	Hailstones drifted 1 to 5 feet deep; much damage to crops and livestock; path 50 miles long.	Official, U. S. Weather Bureau.
Osborn County, Kans.	11	5:30-6 p. m.	17			Tornadoic winds and hail.	Property damaged; path 8 miles long.	Do.
Pleasant and Richland, Iowa.	11	P. m.			500	Hail and electrical.	Property damaged; barn destroyed by fire.	Do.
Dubuque County, Iowa.	12	4 a. m.			5,000	Electrical.	Barn burned.	Do.
Poweshiek County, Iowa.	12	A. m.				do.	Transmission lines damaged by lightning.	Do.
Southern Shelby County, Mo.	12	4:30-9 p. m.		1	2,600	Wind.	Electric wires and property damaged.	Do.
Jones County, Iowa.	12	5:15 p. m.	440		76,000	Tornado, hail, and electrical.	Damage to crops and property; path 5 miles long.	Do.
Moline, Ill.	12	6:20 p. m.			500	Electrical.	House damaged by lightning.	Do.
Traverse City, Mich.	12	6:45 p. m.				Gale.	Telephone wires blown down; many windowpanes broken by hail; motorists unable to drive cars.	Do.
Bremer County, Iowa.	12	P. m.	8			Tornado.	Corn beaten down; machine shed and 2 windmills wrecked; path 1 mile long.	Do.
Jackson County, Iowa.	12	P. m.			15,000	Wind.	Corn crop and property damaged.	Do.
O'Brien and Cass Counties, Iowa.	12	P. m.				Electrical and hail.	Cattle killed by lightning; barn burned.	Do.
Sangamon, Calhoun, and Hardin Counties, Ill.	12	P. m.	18		10,700	Wind, hail, and electrical.	Property destroyed; path 5 miles long.	Do.
Corona, N. Mex.	13	2 p. m.	16			Hail.	No details.	Do.
Isidore, N. Mex.	13	5 p. m.	1,320		225	Rain and hail.	Grass cut off at top of ground.	Do.
Apalachicola, Fla.	13-14				8,000	Heavy rain, wind, and electrical.	Electric power disabled; property damaged; railroad train derailed when tracks washed out.	Do.
Durant, Okla.	14	6 p. m.	12			Hail.	Much damage to crops; path 10 miles long.	Do.
Apalachicola, Fla.	15	1-5:55 a. m.				Wind.	No serious damage.	Do.
Sedalia, Mo.	16	4 a. m.	11		1,800	Hail.	Fall of small hailstones sufficient to stall automobiles several hours.	Do.
Ama to House, N. Mex.	16	8 p. m.	11		5,000	do.	Path 25 miles long.	Do.
Houghton, Mich.	17	A. m.				Thunderstorm.	Large barn with contents destroyed by fire.	Do.
Eastern Washington.	17					Wind.	Strong wind blew fruit from trees.	Do.
Concordia, Kans.	17	9:39-10:02 p. m.	12		20,000	Hail.	Large hailstones caused damage to property; path 4 miles long.	Do.
Alpena, Mich.	18-19					Thunderstorm and wind.	Considerable damage to signs and trees.	Do.
West Baton Rouge Parish, La.	19	1:15 p. m.				Tornado.	Sugarcane blown down; path 8 miles long.	Do.
Powers, Mich. (3 miles south).	19	5:10 p. m.	40		300	do.	Roof of large barn lifted, then dropped onto track; railroad cars blown over.	Do.
Kloman, Mich. (27 miles northeast).	19	6 p. m.				Heavy rain.	No details.	Do.
Keil, Wis.	19	7 p. m.	440		2,000	Tornado.	Telephone and electric poles blown down; trees uprooted; property damaged.	Do.
Chapman, Kans.	21	2:15 p. m.	167		1,000	Small tornado.	Property damaged; path 1 mile long.	Do.
Ford County, Kans.	21	3-4 p. m.	11		700	Heavy hail.	Hailstones fell to depth of 3 to 4 inches; damage to gardens and greenhouses; path 10 miles long.	Do.
Sumner and Cowley Counties, Kans., and vicinity.	21	6:30-7 p. m.	10-20		25,000	Wind.	Electric lines and property damage; path 45 miles long.	Do.
Ossage County, Okla.	21	7:30 p. m.			17,000	do.	Damage to crops and property.	Do.
Wichita, Kans.	21	P. m.			16,500	Electrical and wind.	Power lines disabled; trees and property damaged; airplanes demolished; hangar collapsed.	Do.
New Haven, Conn.	23	do.		1		Electrical.	No details.	Do.
Elk Creek (near), Colo.	28	1-3 p. m.	14			Hail.	Some stones the size of golf balls; property damaged.	Do.
Tehachapi Mountains, Kern County, Calif.	30	1:30-8 p. m.		15	1,000,000	Torrential rains.	Valley dwellings flooded; great damage to railroads, traffic interrupted for 14 days.	Do.

¹ Miles instead of yards.

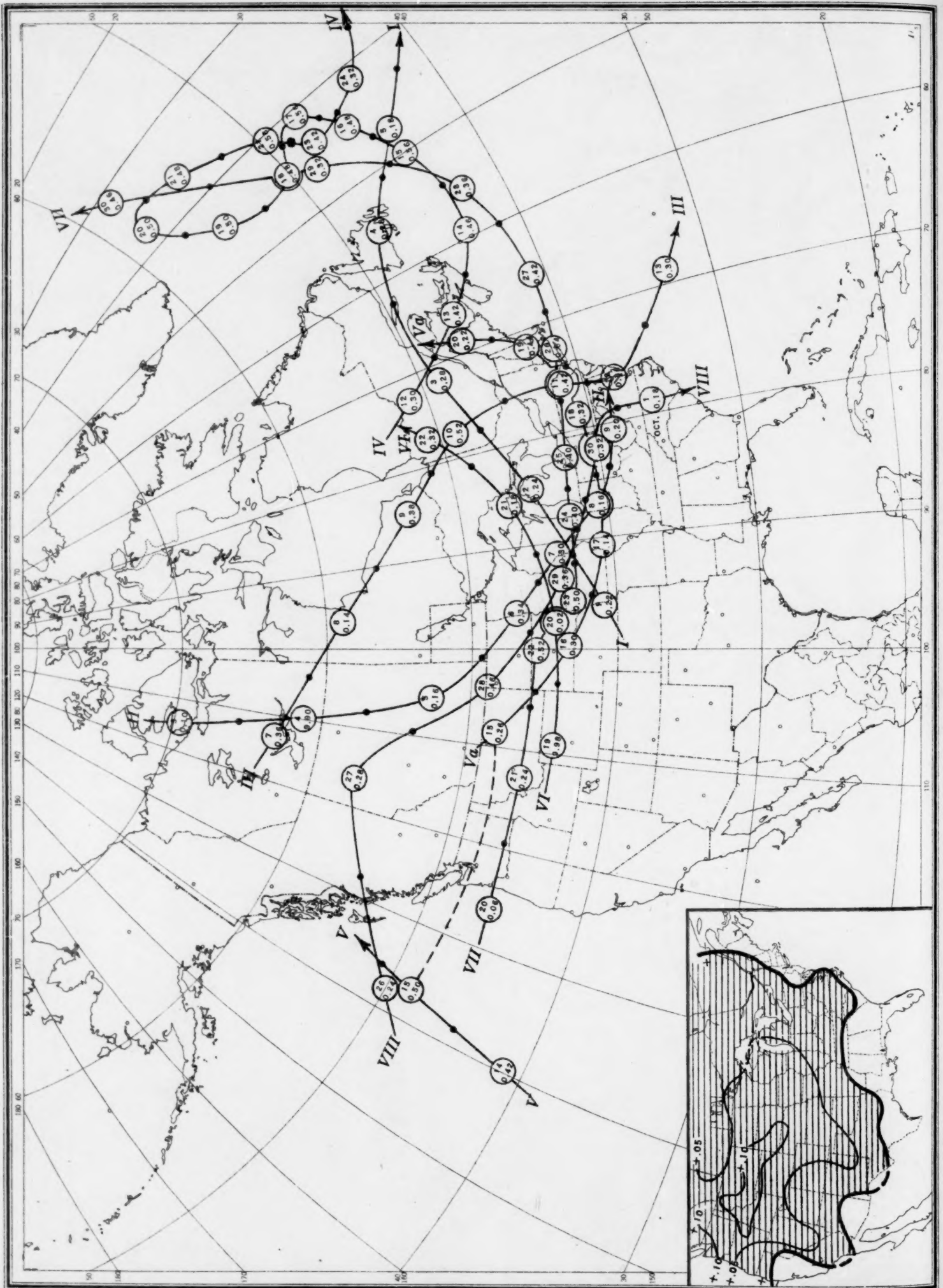
Chart I. Departure (°F.) of the Mean Temperature from the Normal, September, 1932



Shaded portions show excess (+).
Unshaded portions show deficiency (—).
Lines show amount of excess or deficiency.



Chart II. Tracks of Centers of Anticyclones, September, 1932. (Inset) Departure of Monthly Mean Pressure from Normal
(Plotted by G. E. Dunn)

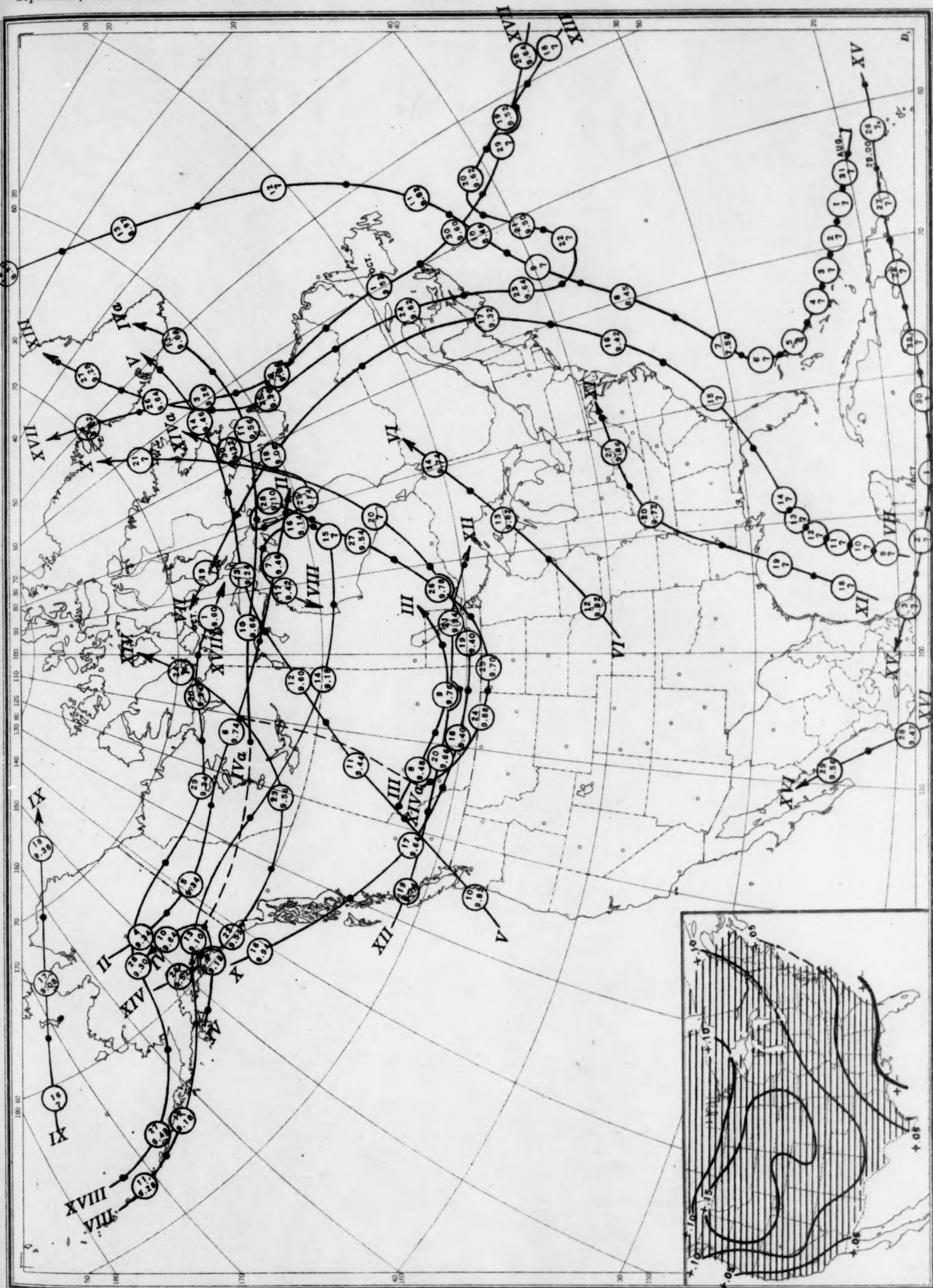


Circle indicates position of anticyclone at 8 a. m. (75th meridian time), with barometric reading. Dot indicates position of anticyclone at 8 p. m. (75th meridian time).

Chart III. Tracks of Centers of Cyclones, September, 1932. (Inset) Change in Mean Pressure from Preceding Month

Circle indicates position of anticyclone at 8 a. m. (75th meridian time), with barometric reading. Dot indicates position of anticyclone at 8 p. m. (75th meridian time).

Chart III. Tracks of Centers of Cyclones, September, 1932. (Inset) Change in Mean Pressure from Preceding Month
(Plotted by G. E. Dunn)



Circle indicates position of cyclone at 8 a. m. (75th meridian time), with barometric reading. Dot indicates position of cyclone at 8 p. m. (75th meridian time).



Chart IV. Percentage of Clear Sky between Sunrise and Sunset, September, 1932

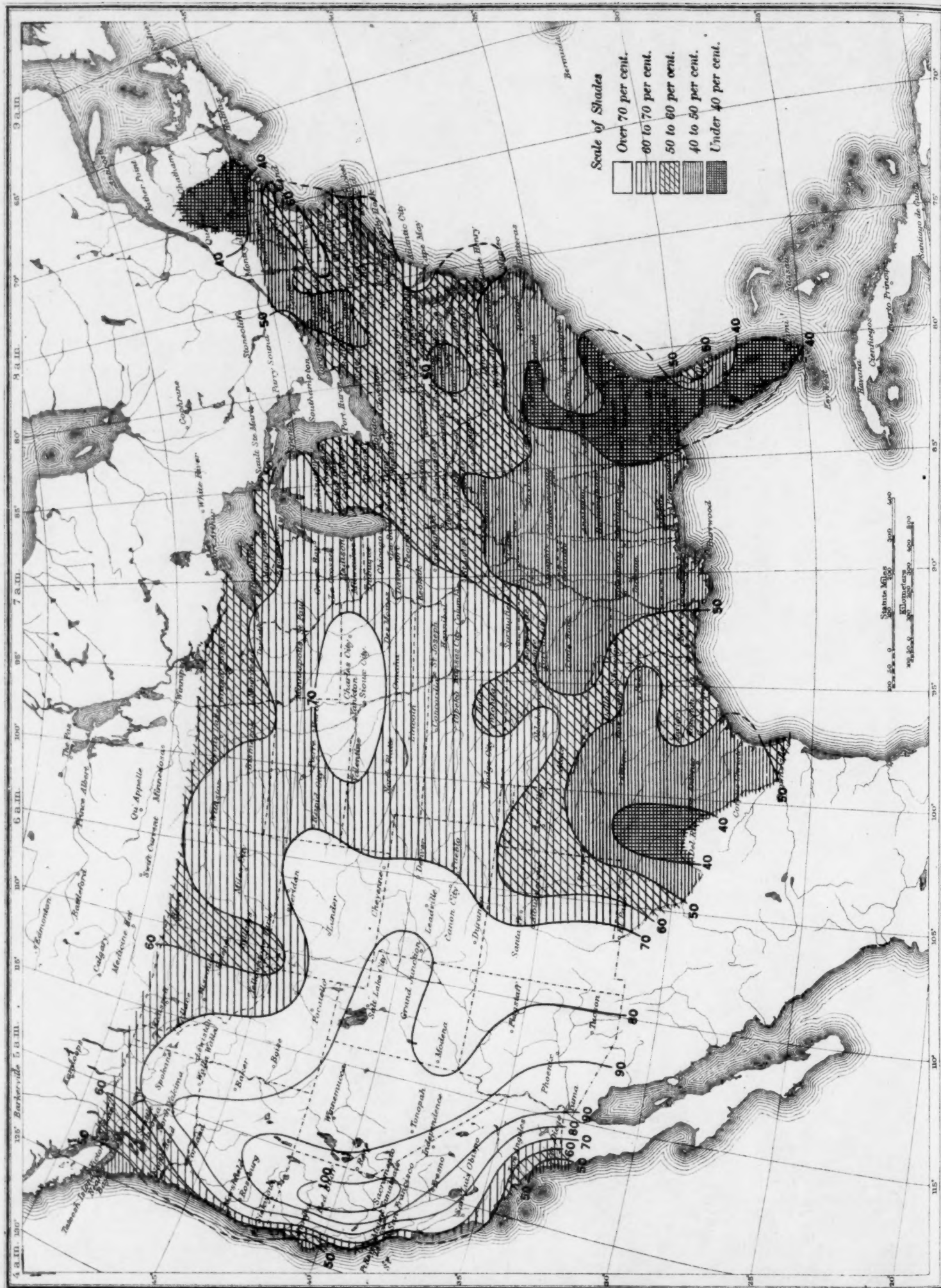


Chart V. Total Precipitation, Inches, September, 1932. (Inset) Departure of Precipitation from Normal

Chart V. Total Precipitation, Inches, September, 1932. (Inset) Departure of Precipitation from Normal

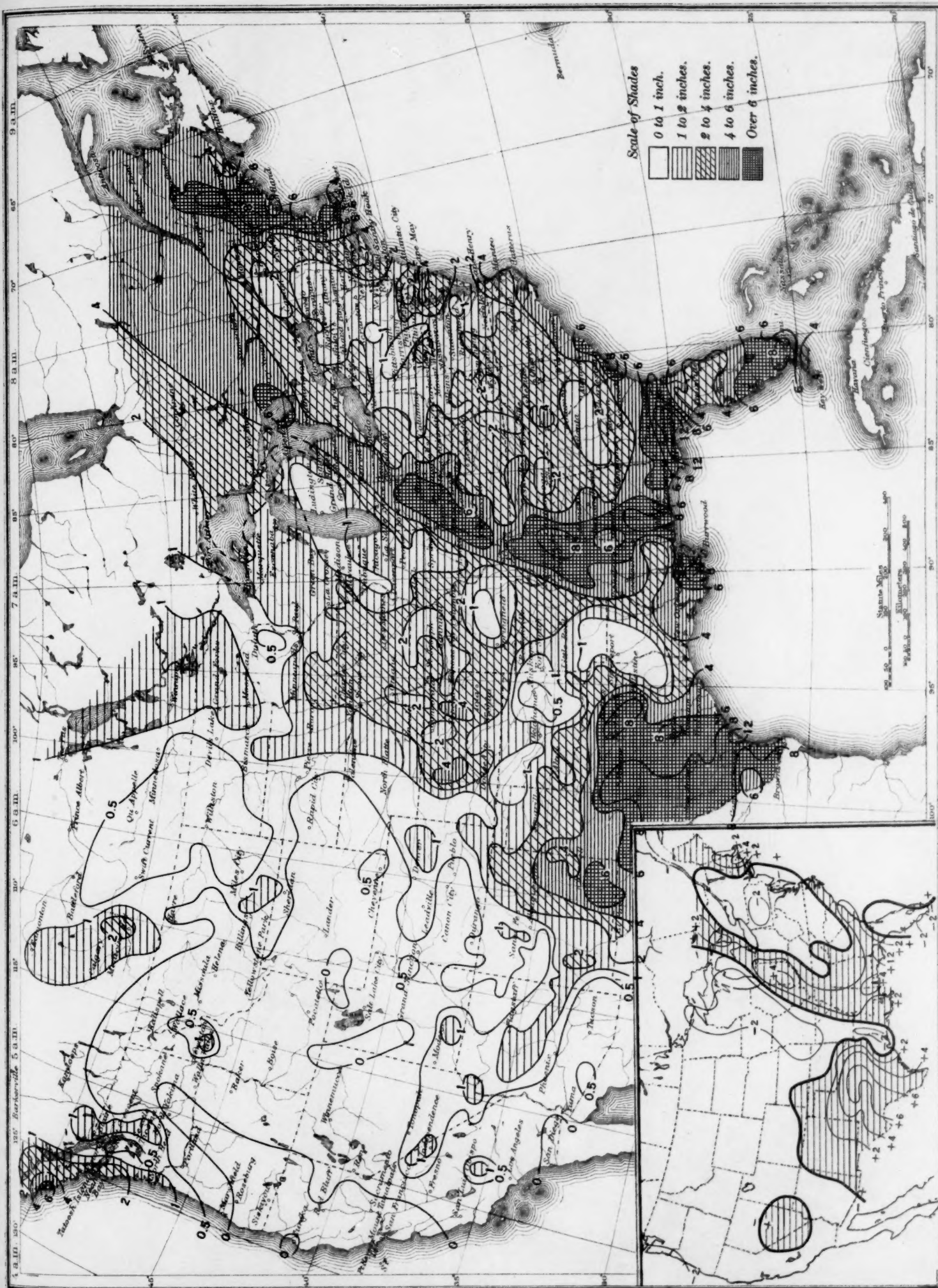


Chart VI. Isobars at Sea level and Isotherms at Surface; Prevailing Winds, September, 1932

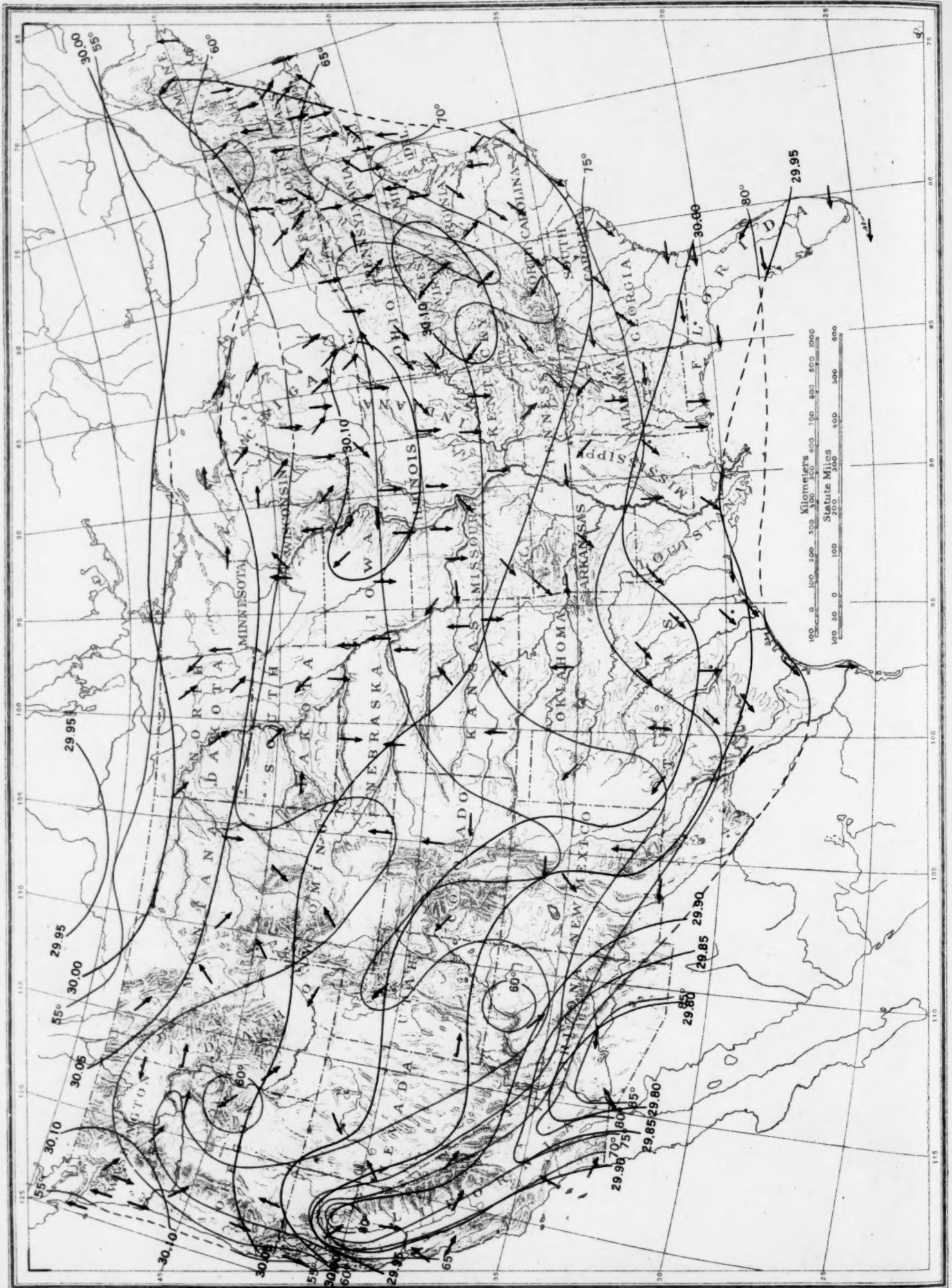


Chart VIII. Chart showing tracks of tropical storms of August and September, 1932

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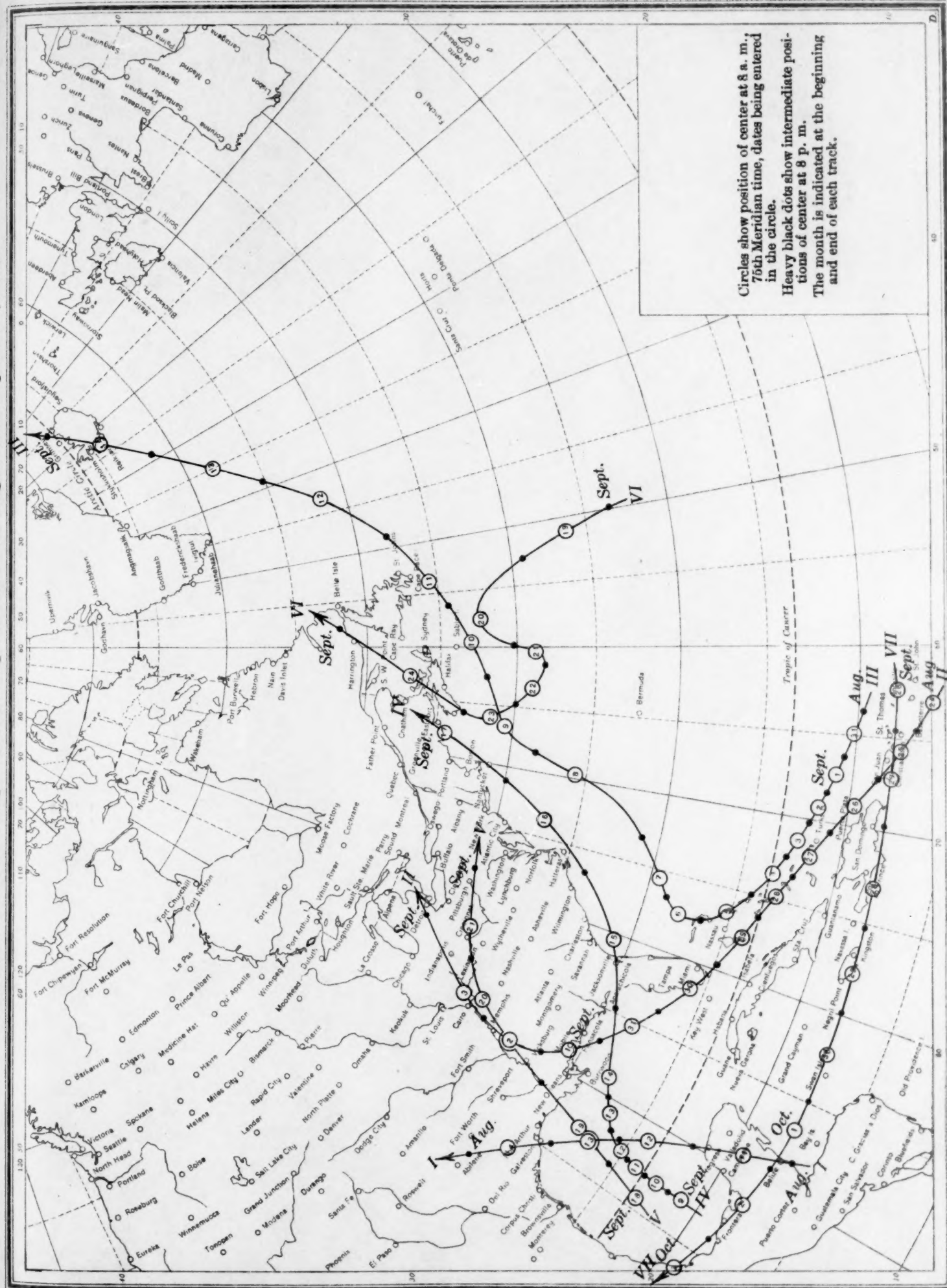


Chart IX. Weather Map of North Atlantic Ocean, September 3, 1932
(Plotted from the Weather Bureau Northern Hemisphere Chart)

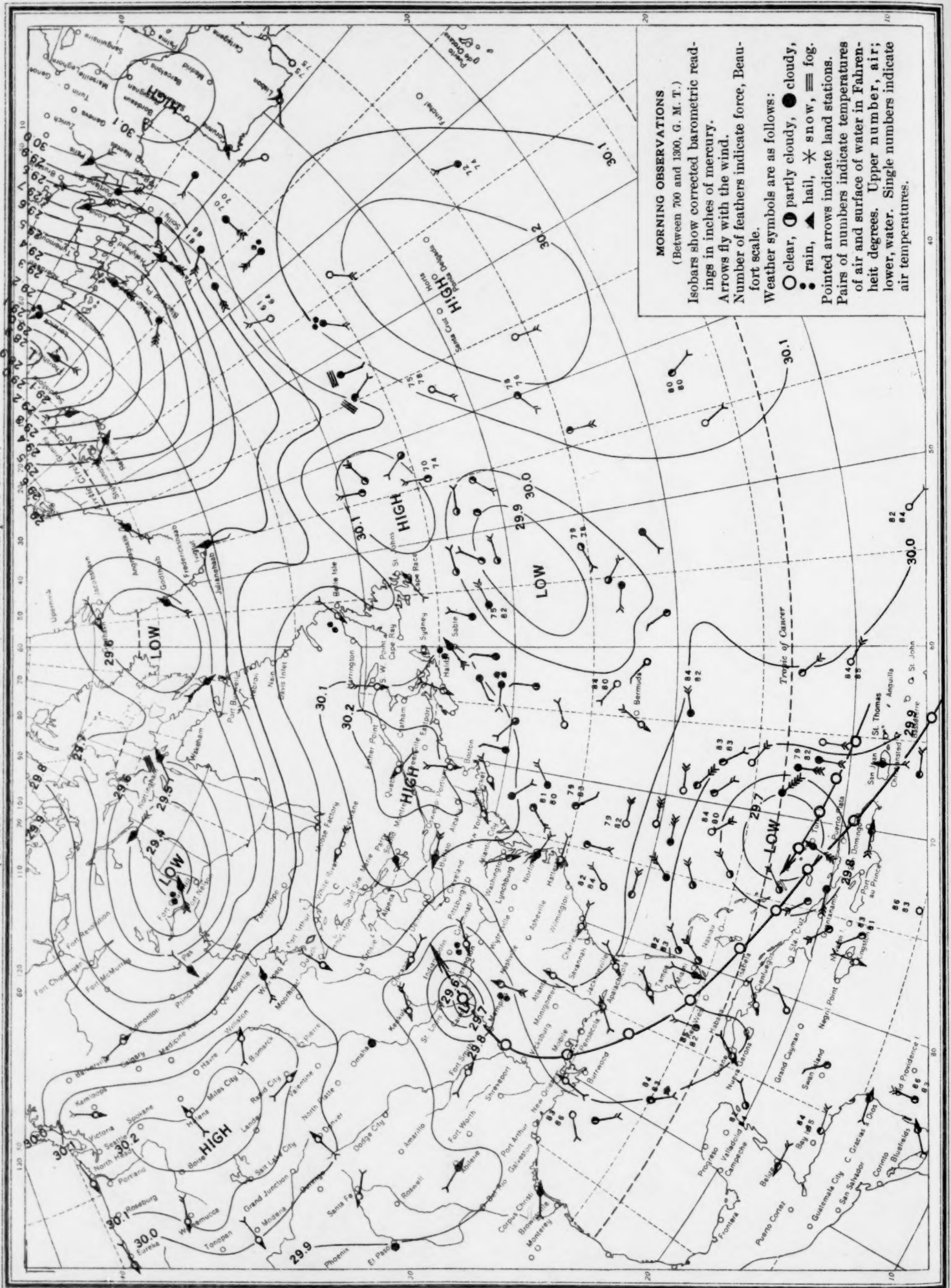
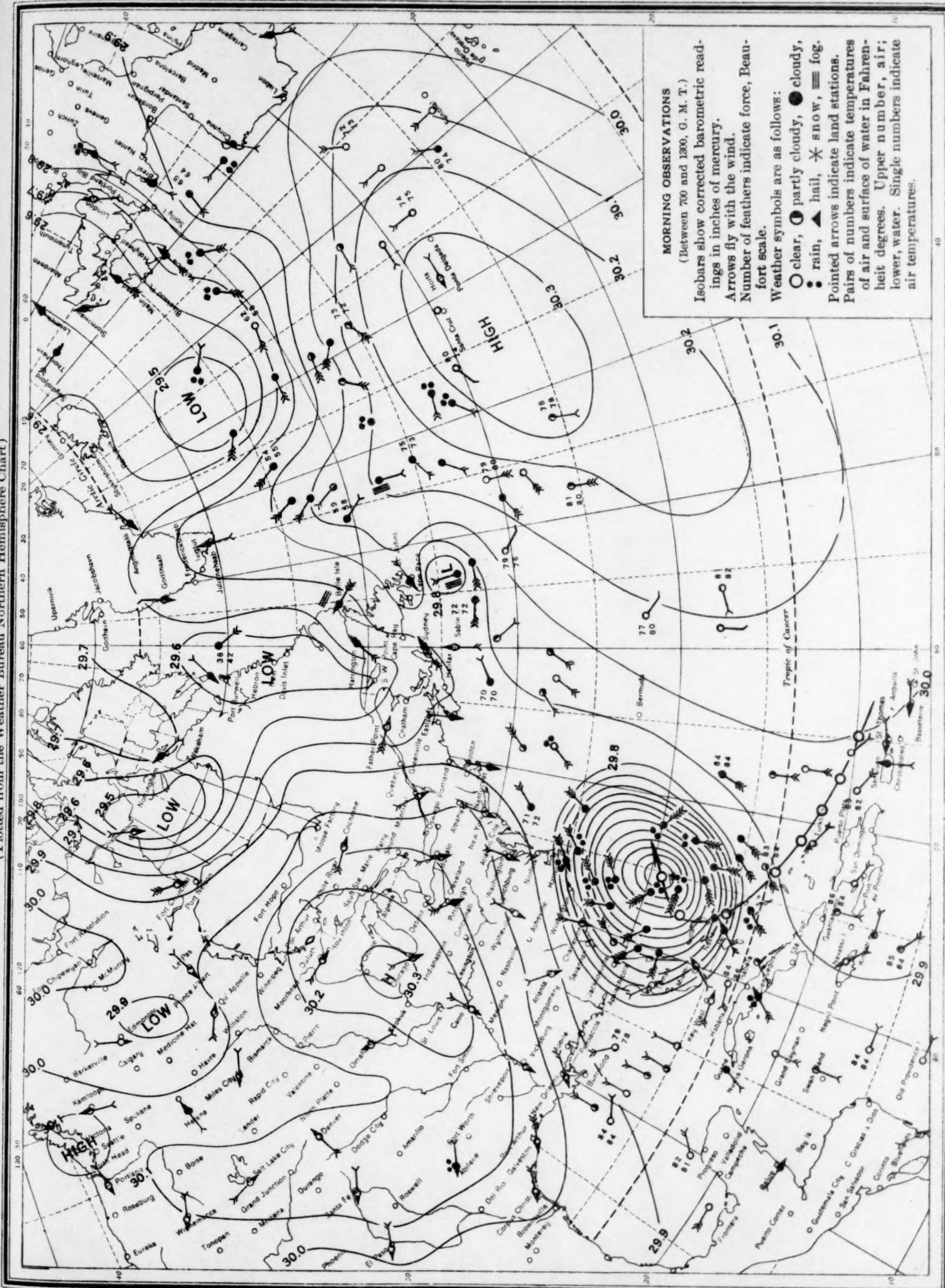


Chart X. Weather Map of North Atlantic Ocean, September 4, 1932

Chart X. Weather Map of North Atlantic Ocean, September 7, 1932
(Plotted from the Weather Bureau Northern Hemisphere Chart)



MORNING OBSERVATIONS
(Between 700 and 1300, G. M. T.)

Isobars show corrected barometric readings in inches of mercury.
Arrows fly with the wind.
Number of feathers indicate force, Beaufort scale.

Weather symbols are as follows:

- clear, ○ partly cloudy, ● cloudy,
- ⋄ rain, ▲ hail, ✱ snow, ≡ fog.

Pointed arrows indicate land stations.
Pairs of numbers indicate temperatures of air and surface of water in Fahrenheit degrees. Upper number, air; lower, water. Single numbers indicate air temperatures.

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Chart XI. Weather Map of North Atlantic Ocean, September 14, 1932
(Plotted from the Weather Bureau Northern Hemisphere Chart)

